

ABSTRACT

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Architecture can help people defend dignity when they most need it. This thesis investigates three areas in which a place may offer support: identity, or personhood; liberty, or control over environment; and vitality, or sense of purpose. The thesis proposes a design for an inpatient rehabilitation center, for people who have suffered from traumatic brain injury (TBI). Challenges to dignity are not limited to health care settings, but TBI highlights these challenges by impairing a patient's own defenses and straining a family's ability to cope. Among proposed architectural elements are rooms allowing self-expression yet offering respite; luminous shafts providing for control of daylight, fresh air, and information; and empowering dining and garden spaces. Rehabilitation is transitional, occurring after acute hospital treatment and ideally leading to a return home. A site in Philadelphia near hospital campuses, but rooted in a residential neighborhood, is an ideal for a place of dignified transition.

ARCHITECTURE IN DEFENSE OF DIGNITY

By

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Chapter 1: Introduction

Traumatic Brain Injury

Background

A traumatic brain injury, otherwise known as an acquired brain injury, is any injury to the brain that has an external cause (Senelick & Dougherty, 2001). Thus, injuries such as stroke and diseases such as Alzheimer's are not considered TBIs. Falls and automobile accidents are among the most prevalent causes of TBI (Senelick & Dougherty, 2001). Improvements in acute care—immediate hospital care—have resulted in more people surviving TBI and living *with* TBI. Nowhere is this more evident than in the increasing number of war veterans living with traumatic brain injury. This thesis proposes a design for a place for survivors of traumatic brain injury. Rehabilitation after a TBI highlights many of the challenges to human dignity. It also presents an opportunity to investigate how places can help defend dignity.

Traumatic brain injury results in changes in personality and behavior, and physical and cognitive deficits in cognition and mobility. The following are some specific effects of TBI:

behavioral, personality, or mood changes	headache
trouble with memory and concentration	confusion
fatigue or lethargy	lightheadedness
increased restlessness or agitation	dizziness
decreased coordination	seizures
slurred speech	ringing in the ears
swallowing difficulties	weakness or numbness

Senelick and Dougherty (2001)

Although many never make a full recovery to a pre-injury state, there is hope. The brain is plastic and is capable of some regeneration (Senelick & Dougherty, 2001).

Type Precedent

An informative precedent is the Origami Brain Injury Rehabilitation Facility. It is a 15,000 square foot, 16-bed residential facility near Lansing, Michigan that also offers outpatient therapies. It is a non-profit organization, viable because of a relationship with Michigan State University. Partnerships are in the following areas: family and community services, kinesiology, nursing, occupational therapy, physical therapy, psychology, rehabilitation counseling, social work, speech language pathology, and therapeutic recreation. The admissions and discharge criteria (Figure 1) are measurable and set up clear expectations for staff and patients and their family and friends. The thesis will assume these criteria for patients in the proposed rehabilitation center. Program will be addressed in Chapter 3.

ADMISSIONS

69% from hospitals and health care providers

3% from home with family support

18% case managers

1. Male or Female 18 years or older
2. Requires more than 12 hours of structured support in the Functional Outcome Focus Area (FOFA): Independent Living
3. Requires therapeutic intervention in any of the following Focus Areas:

Self-Care	Leisure	Self-Direction/Initiation
Safety	Productivity	Social Skills
Learning	Community Access	Communication
4. Capable of transferring self with no more than moderate assistance
5. Medically stable, free from acute infection or fever
6. Does not require daily skilled nursing
7. Minimum Ranchos Los Amigos Level of 4/5
8. Can participate in a minimum of 3 hours of therapy per day
9. Not a danger to self or others
10. Not actively engaged in substance abuse

DISCHARGE

24% to independent living

29% to home with family support

35% to community-based living with support

6% to 24-hour supervision (Adult Foster Care)

1. Individual has achieved a level of functional independence necessitating less than 12 hours of support per day
2. Treatment team's assessment indicates 3-4 consecutive months that the individual has not progressed in Focus Areas: Self Care, Safety, and Independent Living
3. Individual's behavior is not compatible with the program goals, group activities, or may prevent the progress of other participants
4. Poses a risk or danger to self or others

A discharge procedure will be followed ensuring the opportunity to access other appropriate resources. Average Length of Stay was 99 Days.

Figure 1. Admissions and Discharge Criteria. Origami Brain Injury Rehabilitation Center, Lansing, Michigan. Residential Long Term Program.

http://www.origamirehab.org/programs/longterm_treatment.html

Dignity as a Goal

The goal of inpatient rehabilitation is a return home. A person would have a renewed awareness of self, maximum independence, and a life filled with purpose. In investigating dignity, this thesis will use identity, liberty, and vitality to denote these goals. They are components of dignity and will inform decisions that are made throughout the design process.

Dignity in Care

Research and theory on healing environments will be outlined in the following sections. The Planetree philosophy of patient-centered care will be frequently referenced. It emphasizes care, freedom of information and choice, the uniqueness of the individual, and the partnership among patients, family, and staff. The findings will yield guidelines for the design of places that help defend dignity.

Human Interactions

Roslyn Lindheim, professor of architecture at the University of California at Berkeley, has studied a number of cultures through travels. She investigated not just why people get sick, but what fosters wellness and healing. One important conclusion is that, “Patients want and need supportive human relationships, a sense that they are valued and respected, a sense of control over their lives, and an opportunity for meaningful participation” (Gilpin, 2003, p. 3).

Gilpin (2003, p. 5) observes that patient satisfaction has more to do with the quality of how medical care is delivered than quality of the medical care itself. “While the health care system excels at measuring and improving the *what* and *why* of medical care, patients themselves are more concerned with the *how* and by *whom*.” Continuing, “... from the patient’s perspective, every task is more than the delivery of medical services. It is an opportunity for human interaction” (Gilpin, 2003, p. 5).

In addition to surveys of patient satisfaction, medical outcomes research supports the need for human interaction. Research has revealed that social isolation elevates risk of dying after diagnosis of cancer or heart disease. It is hypothesized

that isolation may negatively affect eating, sleeping, and interactions with physicians (Reynolds & Kaplan, 1990). Research also indicates that interaction can protect against stress. The mere presence of a supportive person, even a stranger, can lower blood pressure and heart rate in stressful situations, while a person who is not supportive can have an opposite effect (Kamarck, Manuck, & Jennings, 1990).

According to Gilpin (2003, p.6), social connectedness in most studies is generally defined as “being married, having a confidant, meeting with others in ongoing support groups, or participating in other activities that could foster and maintain long-term relationships.” Also each staff member from housekeeping and food preparation to medical professional is a potential caregiver. “From a patient’s perspective, the title or job description of someone caring is of less importance than the fact that the caregiver is providing emotional support” (Gilpin, 2003, p. 7). Staff is often the other half of a social interaction. Without its wellbeing, the quality of interactions—and caregiving—would decline. Patient satisfaction and staff satisfaction are linked.

What takes place when a caregiver enters a patient’s room? The Planetree philosophy notes that while standardization in delivery of care has been the rule, personalization of the care is what is needed. “One patient may make up at 5 am ready for a bath and breakfast, whereas another patient may routinely stay awake until 3 am and wish to sleep until noon” (Gilpin, 2003, p. 10). The staff is trained to be present, which is defined as “being there,” and is not discouraged from advocating for a patient. An example cited by Gilpin is helping a patient attend a family event out of town by arranging for alternative care. Taking patient satisfaction as a measure, the

Planetree approach has been successful. Patients in Planetree facilities reported better mental health and role functioning compared to patients in other facilities (Martin, Diehr, Conrad, Davis, Leickly, & Perrin, 1998).

Architecture can affect the quality of human interactions. It may reinforce or downplay the hierarchy of an organization, and its connection to the people it serves. Hierarchy in an institution is concerned with reward and recognition over gratitude and appreciation. Some ways to show appreciation is periodically bringing a massage chair to the staff lounge. Showering and changing facilities can provide refreshment for people who commute by bicycle or work long hours. Architecture can provide spaces for staff appreciation and organize patient rooms in a way that allows for personalization of time and manner of caregiving.

Information

In the hospital setting, patients and family are sometimes discouraged from participating in care, and information is not made easily available to patients or their families. This removes control, and by extension, dignity from health care. “Nurses were instructed not to tell patients their vital signs, and hospitals made it difficult for patients to review their own medical records” (Ford & Gilpin, 2003, p. 27-28). The architecture imposed additional obstacles by placing nurses behind high counters and partitions.

There can be confusion today stemming from abundance of information, commercial bias, and confusing jargon. Health care professionals have observed how persistent patients and family can be in pursuing information, navigating seemingly

impenetrable medical jargon. According to a health librarian, “Anyone can learn to understand a few nine-syllable medical terms when it’s their son’s illness, or their mother’s, or their own” (Ford & Gilpin, 2003, p. 28).

One way to provide information is to make a place for it. Information may be conveyed through print or other media. From lay-oriented materials to medical texts, subject matter may include conventional and alternative therapies, diagnosis and treatment options, and information on care giving and coping, mental health, stress management, relationships, diet, nutrition, and exercise. Most health information centers are special services within hospitals, but some are stand-alone centers in the larger community. Partnership with other libraries is another possibility. Ford and Gilpin (2003) note that a variety of seating choices, including a counter with stools for those who are uncomfortable sitting, is essential. Assistance may be offered by staff and or volunteers, who can also help patients and family to find contacts for local and national health organizations and support groups.

According to nurses, other patients and families are sometimes the best source of information, because they can share similar experiences about coping (Ford & Gilpin, 2003). This confirms the importance of providing places that facilitate the meeting of families, such as a kitchen, lounge, or arts program. The spaces that house or provide access to health information center can provide opportunities for human interactions and can double as places for family gathering or community meeting. Often this area can be adjacent to family waiting rooms or part an entrance lobby.

Policy is another area that can affect education of patients. Planetree advocates an open-chart policy where patients and approved support people are free to read the record at any time (Ford & Gilpin, 2003). This has the benefit of reassuring that information is not being withheld and also gives others a chance to catch errors. Another way in which Planetree facilities empower patients and their supporters is through a “Care Coordination Conference”. On the day of admission, the physician, nurse, patient, and supporting family and friends meet to clarify goals and expectations of treatment (Ford & Gilpin, 2003). There are many moments during a patient’s stay that offer moments for teaching, such as diet and medication management. “Too often, patient teaching is left until the day of discharge, when the patient and her family may be distracted and unable to concentrate on the information being given” (Ford & Gilpin, 2003, p. 41).

Dignity follows from respect, and in health care one component of respect is trusting patients and their families and friends to take an active role in care. Education empowers. A precedent for a small library containing information specific to one condition or group of illnesses is the resource collection that can be found in a Maggie’s Cancer Care Center (Powell and Dawson, 2003). Architecture can provide space for research, study, and gathering for discussion even if it does not take the form of an enclosed room. It is also important to respect patients who do not want to be actively involved in medical decision making, so the architecture should make information and discussion accessible but also avoidable. The design solution should facilitate education and discussion in order to reinforce dignity.

Social Support

Family members, close friends, and ‘significant others’ can have a far greater impact on patient’s experience of illness, and on their long-term health and happiness, than any health care professional. Friends and relatives take care of patients, especially when they are home. They offer love and encouragement. They cook meals, look after children, handle the shopping, pay bills, or take on any of the myriad responsibilities of daily life that a sick person cannot fulfill. They often convince the person to seek medical help and then steer them through the receptionists, triage nurses, doctors, billing and insurance offices, and other hurdles of the healthcare system. They are the eyes and ears that watch over the patients and report what they see to doctors and nurses. They remind patients to take medications and follow treatment regimens. And through their own behavior they profoundly influence the lifetime habits that affect the patient’s well-being over the long run.” (Edgman-Levitan, 1993, p. 154)

Besides the interactions that occur between patients and staff, there are the people who are significant to the patient, often family and friends. If one takes the answer to the question, “Who are the visitors?” to be the treatment staff, then the family and friends should never be excluded from the care of a patient. “If we think about what patients and families experience in most health care settings, we find that being a patient is the closest most people get to the experience of being in prison. Patients are stripped of control, their clothes are taken away, they have little say over their schedule—when they eat, bathe, or even go to the bathroom—and they are deliberately separated from family and friends.” (Edgman-Levitan, 1993, p. 154)

There are benefits of having support from friends and family. This support can lead to improvement in functional status (Tsouna-Hadjus, Vemmos, Zakapoulos, & Stamatelopoulos, 2000). Chronic disease requires continuation of care, and post-discharge programs or workshops can help. One study looked at a six-week workshop in a community setting, led by two trained peer leaders with support people encouraged to attend. The workshop addressed techniques to deal with frustration, fatigue, pain, and isolation; skills in problem solving, decision making, and

communicating; and appropriate exercise, nutrition, and use of medication. “At three years, participants continued to report greater confidence, less health distress, and fewer visits to physicians, even though their disability had increased” (Lorig et al., 2001).

Typical policy in Planetree facilities is to identify, upon admission, a family or friend who will be the patient’s support person. It could even be someone hired to help. In some facilities, this support person can stay 24 hours a day if he or she chooses, and shares in all meals and may learn and practice caregiving skills. Alternatively, the person’s role may be limited to emotional support or bringing in food, music, or other familiar things. This person can act as a patient’s advocate, asking questions or mention changes in condition or adverse reactions. The Planetree philosophy also encourages unrestricted visitation by all people the patient consents to see, even in critical care. “For involving families and friends in the patient’s care, there is one simple guideline that can be followed for all interactions and policies: never separate family members and friends from the patient—unless the patient requests it” (Edgman-Levitan, 1993, p. 154). Note that support can include pet visitation, in the form of a pet therapy program or allowing a patient’s own pet to visit, if leash and vaccine policies are met.

Support people require space, and this highlights the role of architecture. Kitchens to prepare a meal for oneself or to cook a patient’s favorite meal ought to be provided. Libraries or lounges allow an alternative place to go when a patient simply needs privacy or is sleeping. Also, healing gardens can give the spirit a break (Edgman-Levitan, 1993).

A day bed, Murphy bed, sleeper chair, or visitor rooms give visitors a place to rest or stay overnight. Upon discharge, the family members and friends often assume the role of primary caregiver. Like the patient, these people need information and emotional support to cope. This should be provided throughout a patient's stay. "It is a simple fact that families need and want the same things that patients do: information, emotional support, and respect" (Vom Eigen et al., 1999, p 33). Architecture can accommodate the people, animals, and belongings that are significant to the patient. This act respects the patient's needs and reinforces dignity.

Nutrition

Let food be your medicine.
-Hippocrates

It is essential that the provision of food is considered as part of healing rather than a separate service department within an institution, and some ways to do this are to ask the patient for his or her preference and to have the people who prepare the food to serve it to the patient. "Again, often it is just the fact that someone has asked them if they would like something special to eat (personalized attention) that means as much as the actual food provided" (Reinke & Ryczek, 2003, p 71).

"Food has the power to comfort and to heal—or cause anxiety and aversion" (Reinke and Ryczek, 2003, p. 71). Smell and taste are closely linked, and smell is linked to memory (Distel et al., 1999). Often, Planetree facilities will allow the smell of fresh baked cookies or Thanksgiving feast to drift through the building. Even patients who cannot partake can enjoy the smell and the memories it can conjure.

Kitchens were previously mentioned as places of gathering. It is desirable to provide a place, however modest, for patients and families to prepare foods. This is also a way to respect the cultural preferences of a patient. However meals are provided, making food available 24 hours a day gives control over nourishment to the patient. When a patient's desires conflict with professional opinion, there is an opportunity for discussion and education. Preferably, dining areas will have access to a patio, a garden, or at least views of nature.

Any design proposal will include a place for preparation of food by patients and family. Because of the varying skills and dietary requirements of people with TBI, some meals may be supplied by contracted services. In addition to empowering patients and families, this place will offer opportunities for structured therapy for activities of daily living. An adjacent dining area for groups, having natural light and views of the outdoors, will give people a place to enjoy food in the company of others.

Spirituality

In some cultures, one person heals mind, body, and spirit. Science has contributed to a separation of the three in healthcare (Handzo & Wilson, 2003), but there is benefit to considering the wellness of mind and spirit in treating illness.

One definition of spirituality is, "the overall experiential and dynamic process for finding meaning and connectedness in life" (Handzo & Wilson, 2003, p. 89). Contributing factors to the placebo effect are connections to a supportive group, sense of control over self (one's response to disease), and the ability to make meaning of a

disease (Siegel, 1984).

Planetree philosophy states that a spiritual or pastoral caregiver should determine a person's spiritual beliefs and practices and how they affect ability to cope, rather than impose doctrine (Handzo & Wilson, 2003). However, ritual can still be important to many patients, and if a patient cannot perform due to physical limitation, a chaplain or other staff can help to create a comparable ritual. In the case of a Muslim patient, "the Iman explained to him that imagining the movements in his mind while praying was equivalent in the eyes of Allah to actually doing them" (Handzo & Wilson, 2003).

Architecturally, a designated chapel is not necessary, but spaces of serenity and peace that allow private or group prayer and meditation should be provided. This includes a patient's room, which should be a place of respite. Moreover, a healing garden and/or a secluded room with natural light and views of nature should be part of any design proposal.

Aesthetics

People say the effect is only on the mind. It is no such thing. The effect is on the body, too. Little as we know about the way in which we are affected by form, by colour, and light, we do know this, that they have an actual physical effect. Variety of form and brilliancy of colour in the objects presented to patients are actual means of recovery.

—Florence Nightingale, on the need for beauty

According to Ulrich and Gilpin (2003), ethics should be considered when art is displayed to patients. Research reveals that patients prefer representational nature scenes to abstract art (Carpman & Grant, 1993). Recovery from stress occurs when viewing scenes of nature versus non-natural imagery, as measured by blood pressure,

heart activity, muscle tension, and brain electrical activity (Ulrich et al., 1991). Furthermore, inpatients recovering from gall bladder surgery had fewer minor complications, shorter stays, required fewer doses of painkillers when viewing nature from a window compared to patients viewing a brick wall (Ulrich, 1984).

In selecting art, Ulrich and Gilpin advise avoiding “ambiguity and uncertainty, emotionally negative or provocative subject matter, surreal qualities, closely spaced repeating edges or forms that are optically unstable or appear to move, restricted depth or claustrophobic-like qualities” (Ulrich & Gilpin, 2003, p. 117). This can be extended to surface treatment and the form of architectural elements.

The Eden Alternative and the Green House Project

The Eden Alternative is a philosophy for elderly care that is critical of conventional practice. Ten principles guide decision making, from policy and staffing to environmental conditions:

1. The three plagues of loneliness, helplessness, and boredom account for the bulk of suffering among Elders.
2. Life in an Elder-centered community revolves around close and continuing contact with children, plants, and animals. These ancient relationships provide young and old alike with a pathway to a life worth living.
3. Companionship is the antidote to loneliness. In an Elder-centered community we must provide easy access to human and animal companionship.
4. A healthy Elder-centered community seeks to balance the care that is being given, with the care that is being received. Elders need opportunities to give care and caregivers need opportunities to receive care.
5. Variety and Spontaneity are the antidotes to boredom. The Elder-centered community is rich in opportunities to sample these ancient pleasures.
6. An Elder-centered community understands that passive entertainment cannot fill a human life.
7. The Elder-centered community takes medical treatment down from its pedestal and places it into the service of genuine human caring.
8. In an Elder-centered community, decisions should be made by the Elders or those as close to the Elders as possible.
9. An Elder-centered community understands human growth cannot be separated from human life.
10. Wise leadership is the lifeblood of any struggle against the Three Plagues. For it, there can be no substitute.

Source: Thomas, W.H. "The Eden Alternative." [http://www.edenalt.com]. 2002.

Note that the “three plagues” may be confronted by a place of dignity.

Identity vs. Loneliness
Liberty vs. Helplessness
Vitality vs. Boredom

The principles of the Eden Alternative guide decisions but do not make specific recommendations about the form and organization of architecture. The principles do seem to advocate an environment that allows for community, care, activity, growth, contact with nature. The Green House Project may be seen as the architectural manifestation of the Eden Alternative principles.

A Green House home is a module for 6 to 10 elders; two or more modules may be placed near each other on the same grounds, or stacked vertically (although this sacrifices direct access to outdoor ground). According to the founders, “Its primary purpose is to serve as a place where elders can receive assistance and support with activities of daily living and clinical care, without the assistance and care becoming the focus of their existence” (The Green House Concept, 2008).

Figure 2 shows a diagram of a Green House home. Central to the home is a hearth that is the place of gathering and community activity. There is soft seating and also a dining area that can accommodate residents, caregivers, and family. The adjacent kitchen permits anyone to be involved in meal preparation. There are views of nature. Gathered around the hearth are the residents’ private rooms, each having a view of the outdoors. The sleeping areas are buffered acoustically and spatially from the hearth by a circulation zone and patient bathrooms. Adjoining the hearth is a space for support activities, such as an office and a salon. Furnishings and finishes are domestic (soft and warm) rather than institutional. The restricted size and clear plan of each house ensures ease in wayfinding.

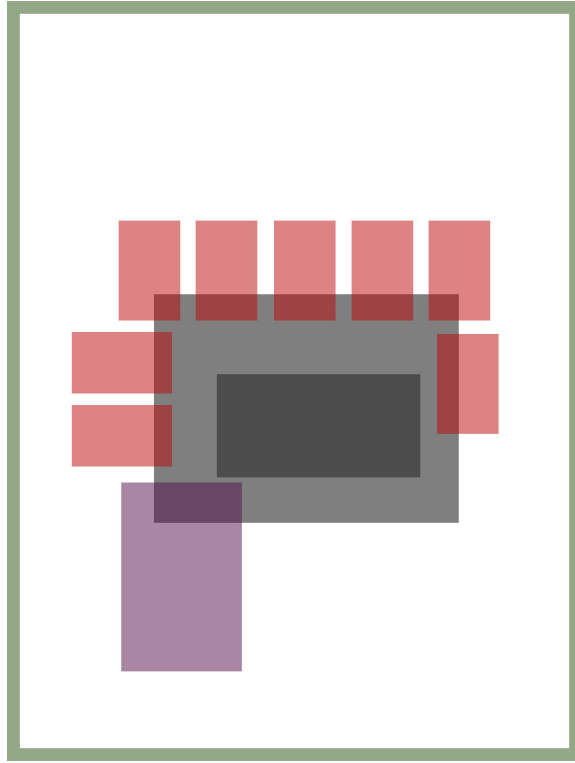


Figure 2. Green House Home Diagram. Bedrooms (red); hearth (grey); support (purple).

Any design proposal for this thesis will contain central places for community gathering, food preparation, and dining. Even if a site does not allow for a circular clustering of rooms around a hearth, this parti might be transformed while maintaining a central place of gathering, privacy of rooms, and access to nature. The Eden Alternative principles and Green House founders' statement are about dignity. Although formulated for elderly care, they may be applied to the care of people with traumatic brain injury.

Conclusions

The investigation of research and theory of healing environments has yielded a number of directives to guide the design process. Reinforce identity by giving each resident a distinct, private place of his or her own. Make the building clear in its organization and easy to navigate. Liberate residents and their families by providing easy access to information, a place to prepare a favorite meal, and the means to control privacy, light, and thermal comfort. Treat family as such, not as visitors, by giving them a key to the building, a pillow to sleep on, and a seat at the table. Create a place of vitality by providing for places of gathering, and for activities such as cooking, painting, and gardening. Furnish and finish spaces so that they convey warmth and life, and provide views of nature and access to the outside.

Chapter 2: Site

Existing Conditions

Location

The site is in Philadelphia, Pennsylvania. The city was founded in the 17th century as a grid between two rivers. Colonial development started at the banks of the Delaware River and spread westward. Figure 3 shows aerial views of Philadelphia, with annotations. The major cross streets are east-west Market Street and north-south Broad Street.



Figure 3. Aerial Photographs of Philadelphia. City Hall is located in a square at the crossing of Market and Broad Streets (top). A detail of the boxed area (bottom). The site is highlighted in yellow. Aerial photography © 2007 Microsoft Corporation. Images courtesy of USGS.

Topography

Figure 4 on the following page shows the topography of the area surrounding the site. The area west of the Schuylkill River is characterized by rolling hills. One local high point is in the Woodlands Cemetery Park. The low point is a small bowl-like valley in Clark Park immediately west of the site. The site slopes down from the northeast corner of the site to the southwest, with an elevation change of six feet across the site.



Figure 4. Topography. Interval: two feet; Site (yellow); Local low point (1); Local high point (2). GIS data obtained through Pennsylvania Spatial Data Access (PASDA). © 2007 City of Philadelphia.

Legal Boundaries

The site is on the southeast corner of the intersection of Chester Avenue and 43rd Street, across from Clark Park. Figure 5 shows the legal boundaries for the site and adjacent area. Note the variety of parcel sizes on Baltimore Avenue, Chester Avenue, and Regent Street. The site is a large corner parcel with an 80-foot lot line on Chester Avenue and a 175-foot lot line along 43rd Street. Along the south side of Chester Avenue, duplex residences bridge two parcels. Near the site, parcels are oriented north-south and housing fronts on Chester Avenue and Regent Street, not on 43rd Street and Clark Park.

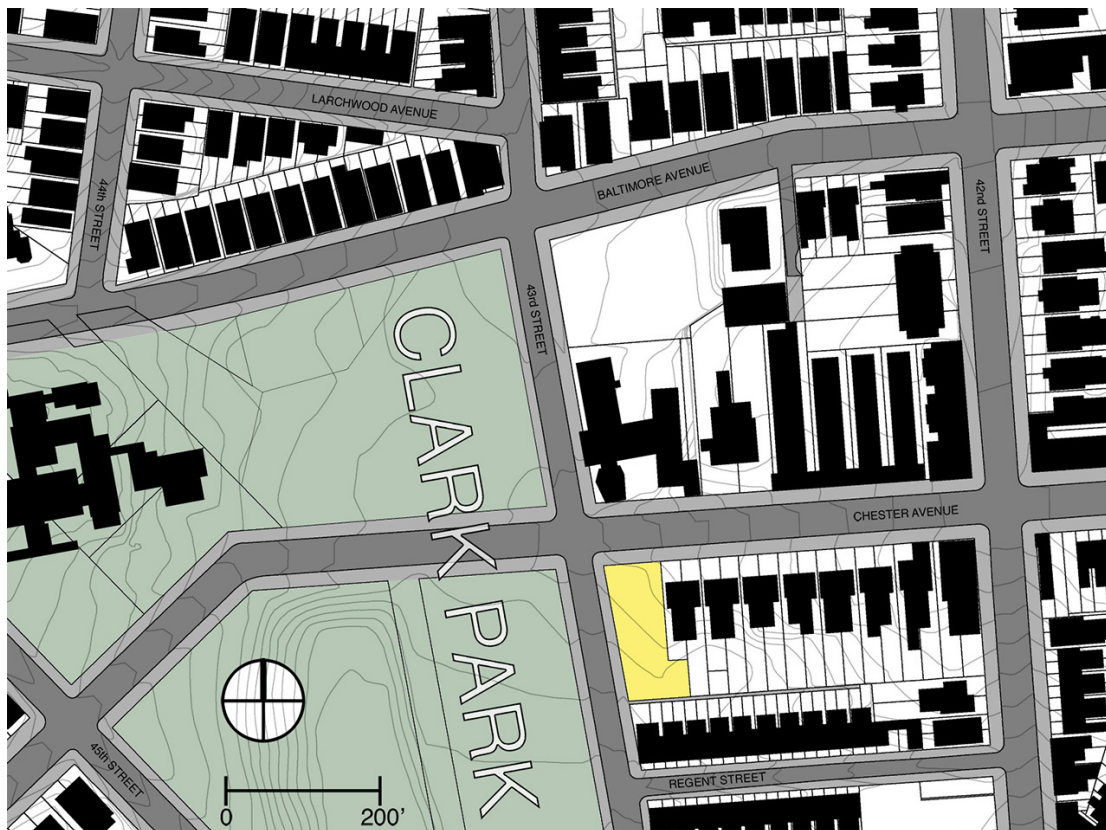


Figure 5. Legal Boundaries. Site indicated in yellow. GIS data underlay obtained through Pennsylvania Spatial Data Access (PASDA). © 2007 City of Philadelphia.

Zoning

The site is in an R5 residential zone, in a predominantly residential neighborhood. The recreational park is adjacent, and some block corners are zoned for commerce. A map and a summary of the code that will influence the building are shown below in Figure 6.

ZONE

R-5

PERMITTED USES

Single Family
Residential Related Uses
Non-Residential Uses (including medical and surgical hospitals and medical centers, and sanitariums; rest, old age, nursing or convalescent homes, and nurseries)

BUILDING TYPE

Detached and Semi-Detached
Non-residential uses must be in detached buildings

MINIMUM OPEN AREA

50%

SETBACK

8 ft Front and Side Yard Minimum Depth
20 ft Rear Yard Minimum Depth

BUILDING HEIGHT LIMIT

35 ft + 1 ft for each foot of additional setback from all lot lines

STREET FRONTAGE

At least two-thirds of lot width at widest point

PARKING

- two spaces per 10 dwelling units
- 10 ft x 18 ft minimum dimension
- one van accessible space per eight spaces
- locate open-air or detached garage parking between building and required setback

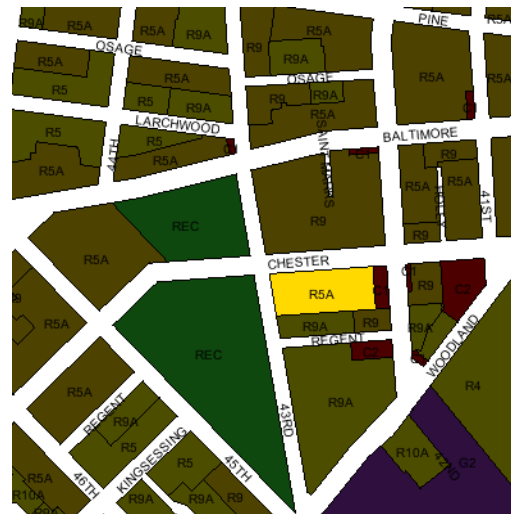


Figure 6. Zoning Summary and Plan. Source: Title 14: Zoning and Planning. (2008). *The Philadelphia Code (9th Edition)*. Cincinnati: American Legal Publishing Corporation.

Existing Street Elevations

Figure 7 on the following page shows street elevations for 43rd Street and Chester Avenue. The street elevations and site panorama show a clinic to the north, semi-detached housing to the east, townhouses to the south, and Clark Park to the west. Chester Avenue and 43rd Street sponsor two-way traffic. The trolley lines that run along Chester, Baltimore, and Woodland Avenues connect West Philadelphia neighborhoods to the universities and hospitals of West Philadelphia and to the central business district, city subway, and regional rail transportation in Center City. Housing is predominantly three stories, and the buildings shown in these photos have heights no greater than 35 feet.

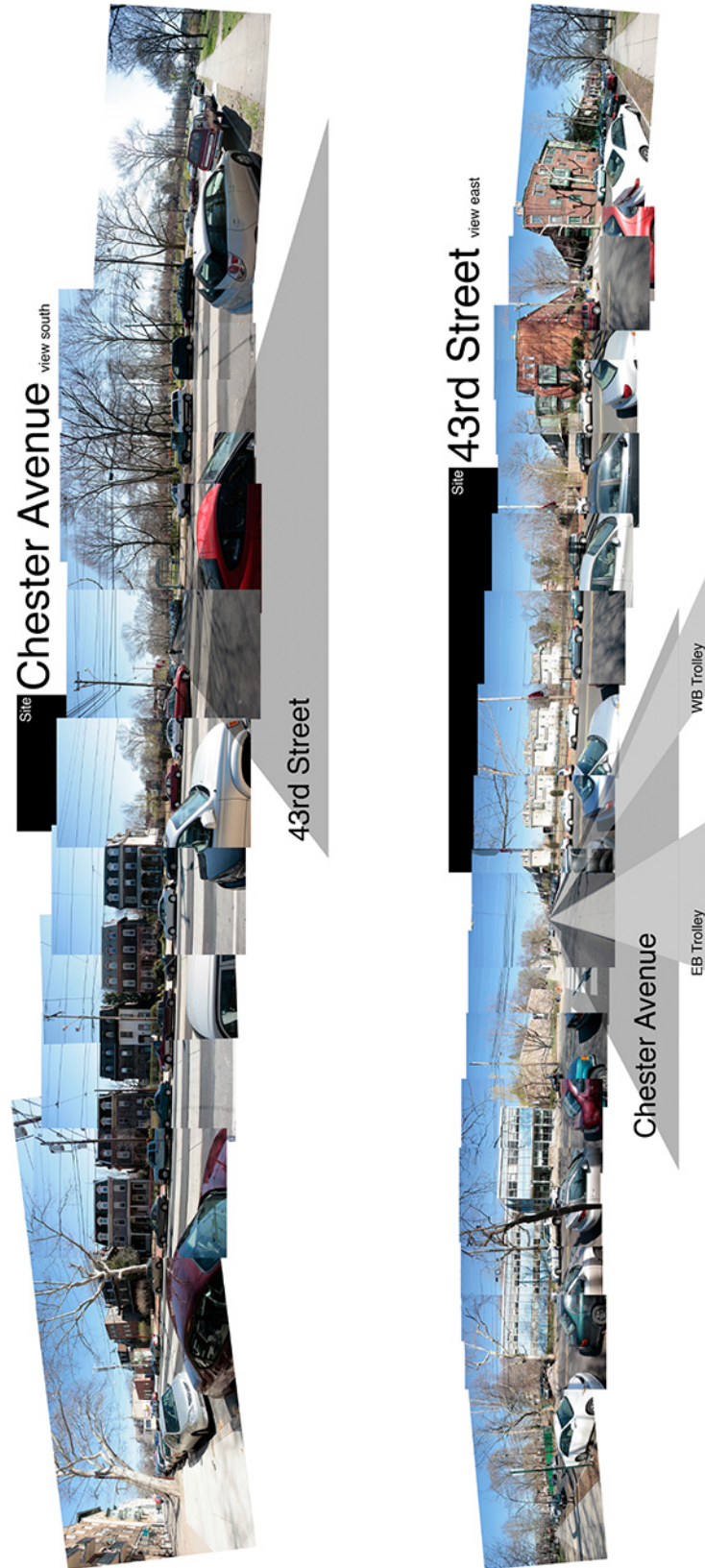


Figure 7. Existing Street Elevations. Chester Ave. Elevation (upper); 43rd St. Elevation (lower).

Site and Park

Clark Park is a neighborhood park that has a playground and bench seating. It hosts a seasonal farmer's market. Figure 8 on the following page shows a panorama of the park, looking toward the site. The bowl depression in the park sponsors informal activities kite-flying, soccer, and Frisbee. The corner site itself, shown in Figure 9, is currently a fenced lot that is maintained as a wildflower garden. The photograph shows the relationship between the site and park.



Figure 8. Clark Park Panorama. Looking east toward site (boxed).



Figure 9. Site Panorama. Looking south down 43rd Street at site (left) and park (right).

Figure-Ground

The diagram in Figure 10 shows the larger institutional buildings in the east, and the finer grain of the residences surrounding the site. The exceptions are the two buildings near the site that stand out as unique figures: the city clinic across the street from the site and the building in the park—the HMS School for Children with Cerebral Palsy. The buildings at the east end of the block meet the sidewalk, but these are duplexes with ad hoc front additions. The reason for these additions is economic: increased retail or apartment space. The thesis does not suggest retail frontage and zoning does not allow for it, or for lot coverage in excess of 50%, so there is no compelling reason to deviate from the line of the adjacent residences.



Figure 10. Figure-Ground. Site (yellow). GIS data underlay obtained through Pennsylvania Spatial Data Access (PASDA). © 2007 City of Philadelphia.

Land Use

Figure 11 on the next page shows land uses for the area surrounding the site. The major green spaces have a green overlay. These include Clark Park and the Woodlands Cemetery, which are both within a five-minute walk of the site. Major institutions are shaded with blue. Dark blue denotes the University of Pennsylvania (UPenn), and the University of the Sciences in Philadelphia (USP). USP is also within a five-minute walk of the site. Light blue indicates the campuses of the Hospital of the University of Pennsylvania (HUP), the Philadelphia VA Medical Center (PVAMC), and the Children's Hospital of Philadelphia (CHOP). The red shading contains the site and denotes the area that is characterized by predominant residential land use with isolated corner retail uses. The proximity of the universities and hospitals offers opportunities for partnerships. The veterinary hospital of the UPenn School of Veterinary Medicine currently helps to underwrite the cost of animal healthcare for the CHOP pet therapy program and may be willing to do the same for this facility. USP offers programs in health psychology, physical therapy, and occupational therapy. HUP is a teaching hospital for UPenn's School of Medicine and School of Nursing. UPenn also offers programs in social work and clinical psychology. The facility may offer opportunities for internships or part-time positions. Lastly, patients may have received acute and subacute treatment at any of the local hospitals prior to admission to this facility. The site offers proximity to physicians.



Figure 11. Land Use. Parks (green); universities (dark blue); hospitals (light blue); residential areas (red). Aerial photo underlay © 2007 Microsoft Corporation. Image courtesy of USGS.

Public Transportation

The transit authority, SEPTA, operates buses, subway, and trolley within the city and in the larger region. There are connections with regional rail lines that link to the Philadelphia International Airport, to the suburbs north and west of the city, to New Jersey in the east, and Delaware to the south. The Amtrak national rail operates through 30th Street Station, accessible by cab and public transportation. City buses are equipped with a lift and seating areas for the elderly and disabled. Trolleys are not wheelchair accessible. It should be noted that SEPTA also operates an ADA Paratransit Service for disabled citizens.



Figure 12. Public Transit Trolley

Figure 13 shows the public transportation lines near the site. The site is easily accessible by public transportation, and there are visual and auditory cues at most major pedestrian crossings. The commerce and cultural attractions of Center City are within short distance.

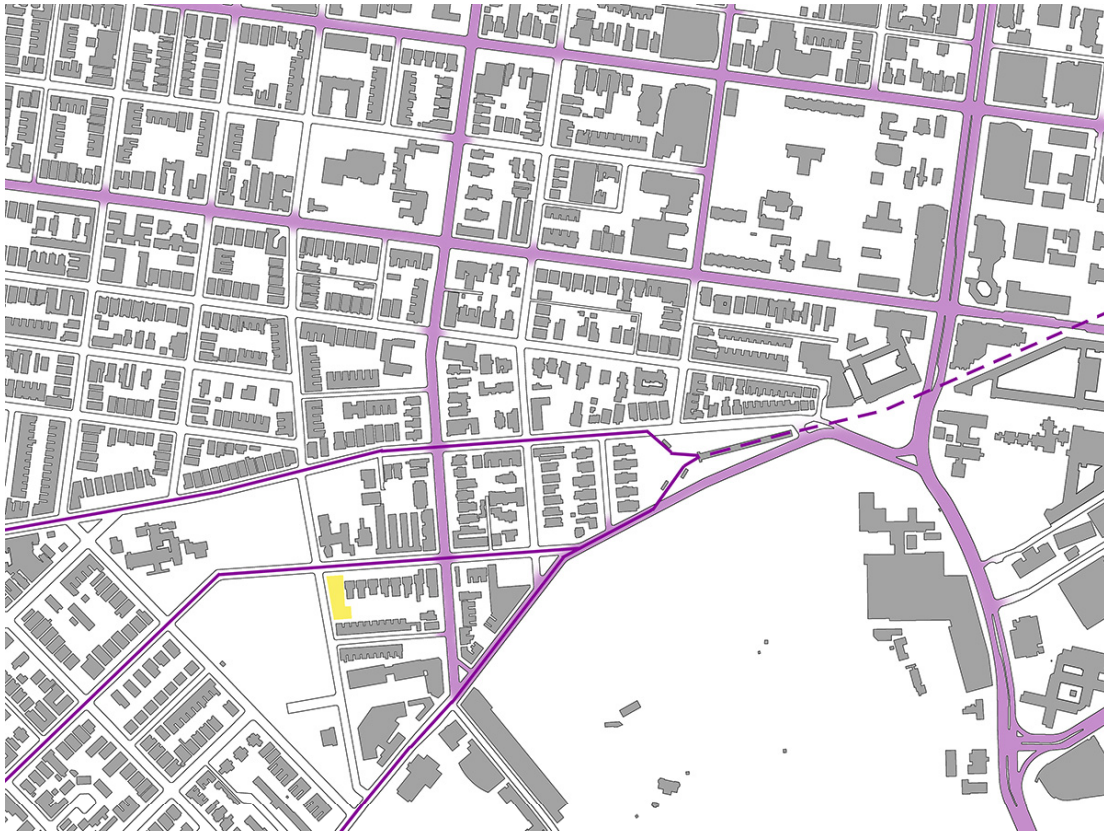


Figure 13. Public Transportation Network. Light purple denotes bus service. Dark purple shows location of subway and surface trolley lines. GIS data underlay obtained through Pennsylvania Spatial Data Access (PASDA). © 2007 City of Philadelphia.

Conclusions

The site is appropriately located between hospital and home, within a residential neighborhood. West Philadelphia residents frequently have health care facilities as neighbors, and there is precedent in and around Clark Park for buildings that are of the residential fabric and those that stand out as institutions. Existing public transportation will provide means for residents, family, and staff to travel to and from the city center and suburbs. The site's adjacency to vibrant Clark Park offers opportunities for views of nature. The zoning regulations will support a three-story structure with a maximum 6000 sf building footprint. In the next chapter, a discussion of precedent architecture will provide formal and organizational guidance for the schematic options and the design proposal that follows.

Chapter 3: Precedent Study

Form

REHAB

Herzog and DeMeuron, Architects
Basel, Switzerland
2002

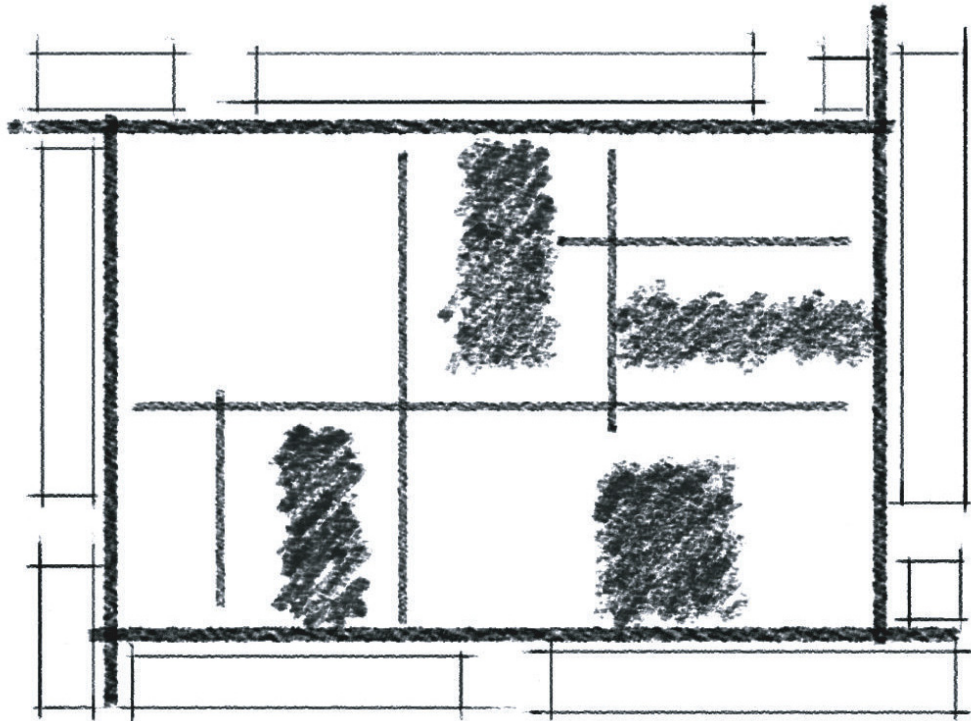


Figure 14. REHAB Plan Diagram. Linear bars of patient rooms are punctuated by spaces for gathering and dining. Corridors provide access to patient rooms and to the treatment spaces in the core. Open courtyards (rough hatching) bring light and plant growth deeper into the plan and section of the building. Office, a day clinic, and outpatient services are on the ground floor.

Monastery of Sainte-Marie de La Tourette

Le Corbusier, Architect
Eveux-sur-l'Abresle, France
1960



Figure 15. Monastery of Sainte-Marie de La Tourette Photographs. The senior clergy cells have views of the woods down the slope of the hill. Each cell is sized and furnished to meet the basic needs of sleeping, grooming, individual prayer, and study.

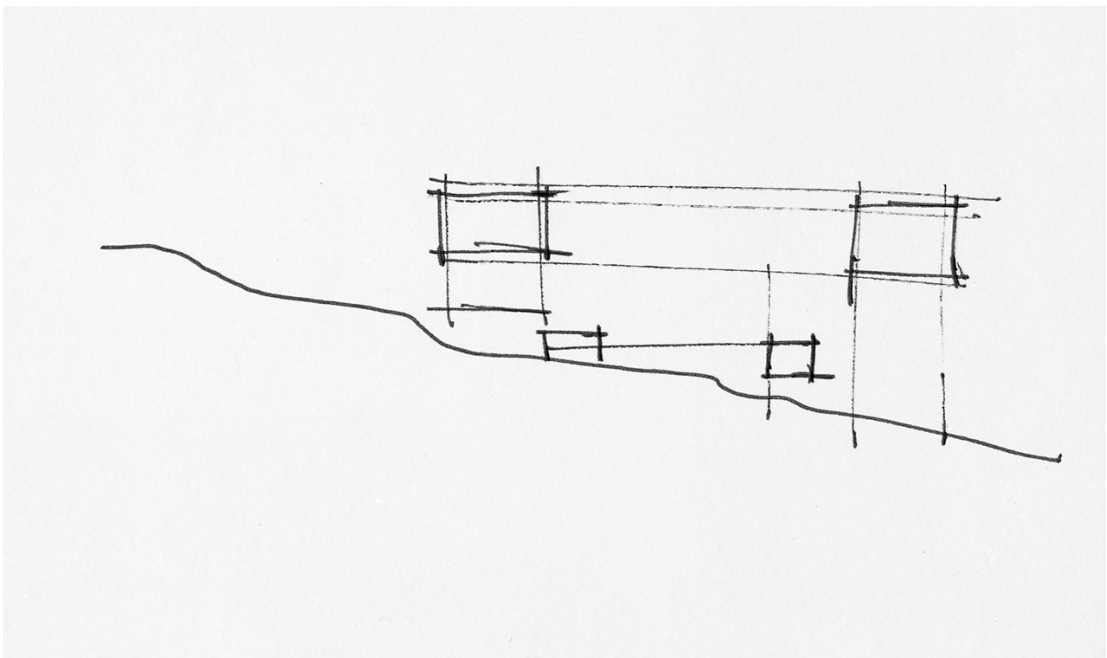
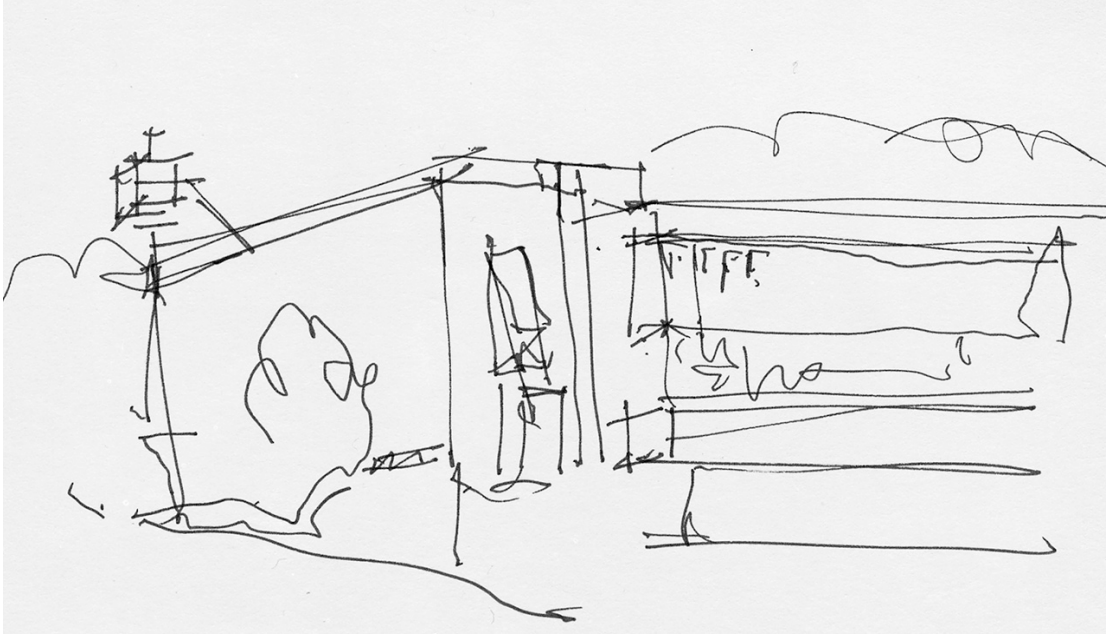


Figure 16. Monastery of Sainte-Marie de La Tourette Sketches. The cells are in elevated zones of the building. Each cell offers a unique view of the landscape, and is isolated from its neighbor in order to provide a place for individual practice.

Unité d'habitation

Le Corbusier, Architect
Firminy-Vert, France
1965



Figure 17. Unité d'habitation Photographs. The playful concrete forms on the roof terrace depart from the modular organization of the residence floors. The terrace offers sunlight, opportunities for group activities, and vistas.

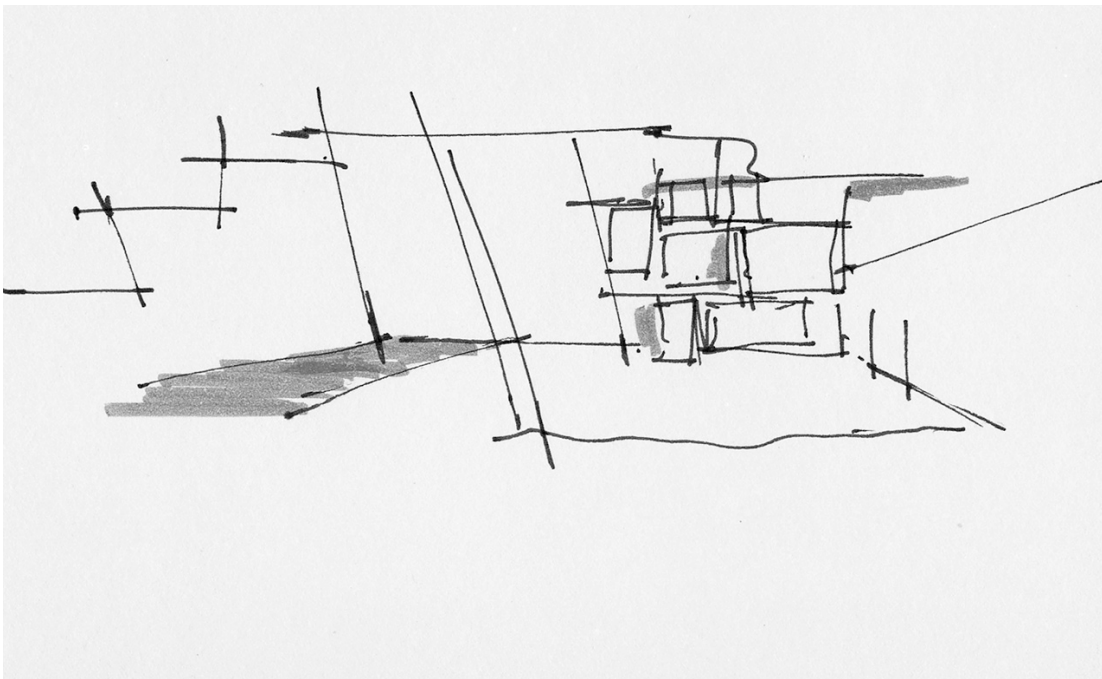
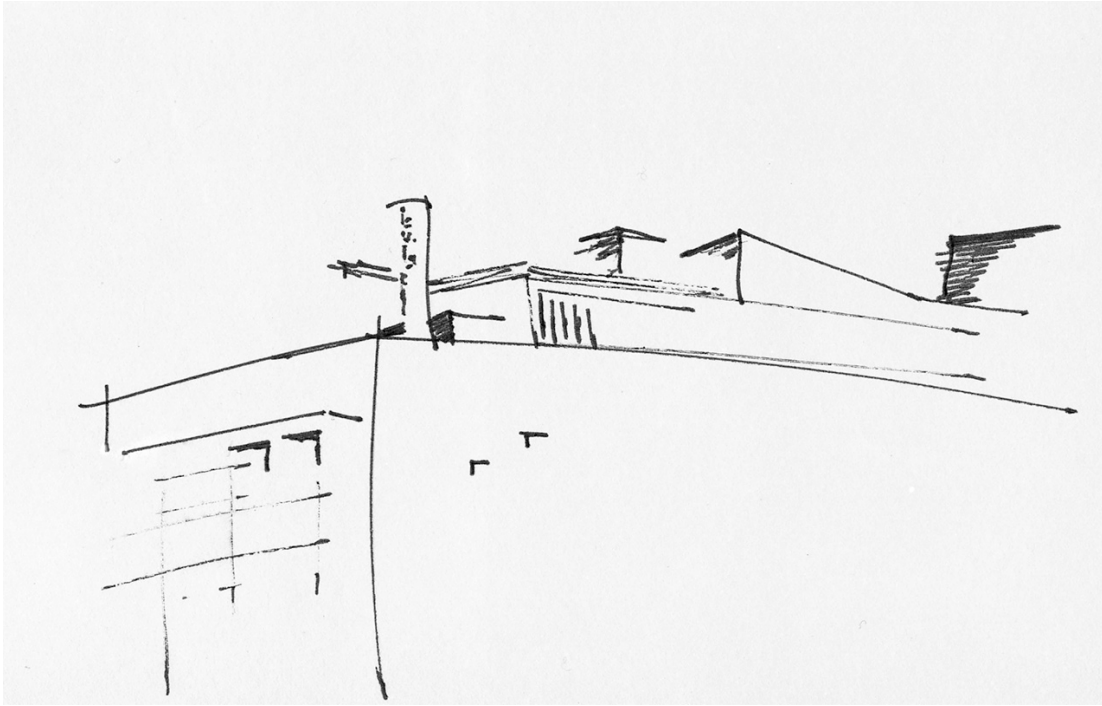


Figure 18. Unité d'habitation Sketches. This project is notable for its use of the roof, and for how the building meets the sky. The roof terrace has a variety of forms, each of which can shape activities for group sizes large and small.

Therme Vals

Peter Zumthor, Architect
Vals, Switzerland
1996

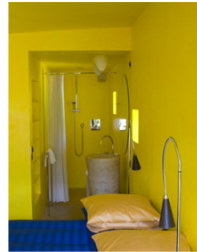


Figure 19. Therme Vals Photographs. From the exterior (left), an otherwise monolithic face is given a playful rhythm. The interior of a hotel room (right) shows bold use of color and subtle use of texture, both of which interact with light in different ways depending on season, weather, and time of day.

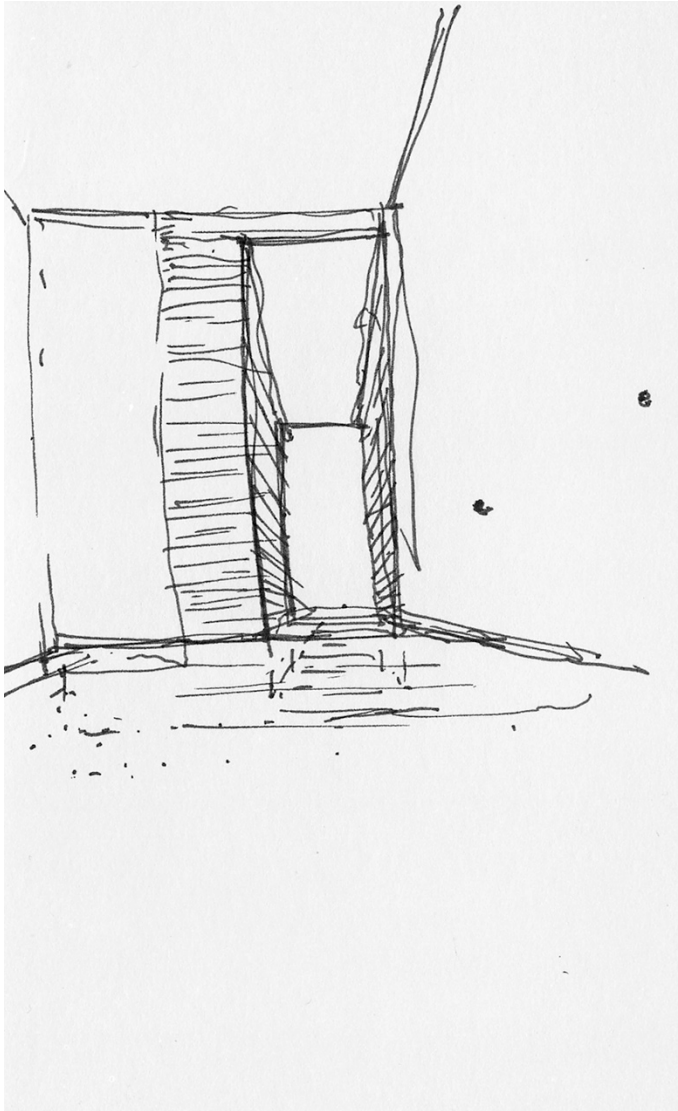
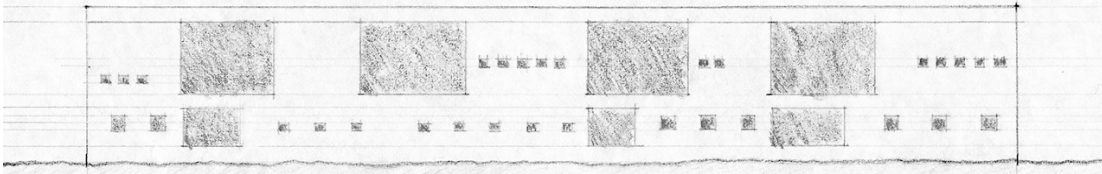


Figure 20. Therme Vals Sketches. The building containing the baths (top) has openings of varying scales. The small openings are sized and positioned for intimate one-on-one spa treatments and relaxation lounges. The larger openings are scaled for groups of people in a grander setting of the central pool, with the outdoor landscape as backdrop. Each interior space (bottom) has its own mood that is a product of temperature, color, sound, and texture.

Program

Occupants

Based largely on the staff and patient population of Origami Brain Injury Rehabilitation Center, the building users are forecast to include the following staff, patients, and other guests:

Director	Physical Therapist (2)
Assistant	Speech Therapist
Receptionist	Social Worker
Accountant	Physician
Nutritionist	16 Resident Patients
Nurse or Nursing Assistant (2)	Visiting Family

On the next page, Figure 21 shows the proposed program.

Needs

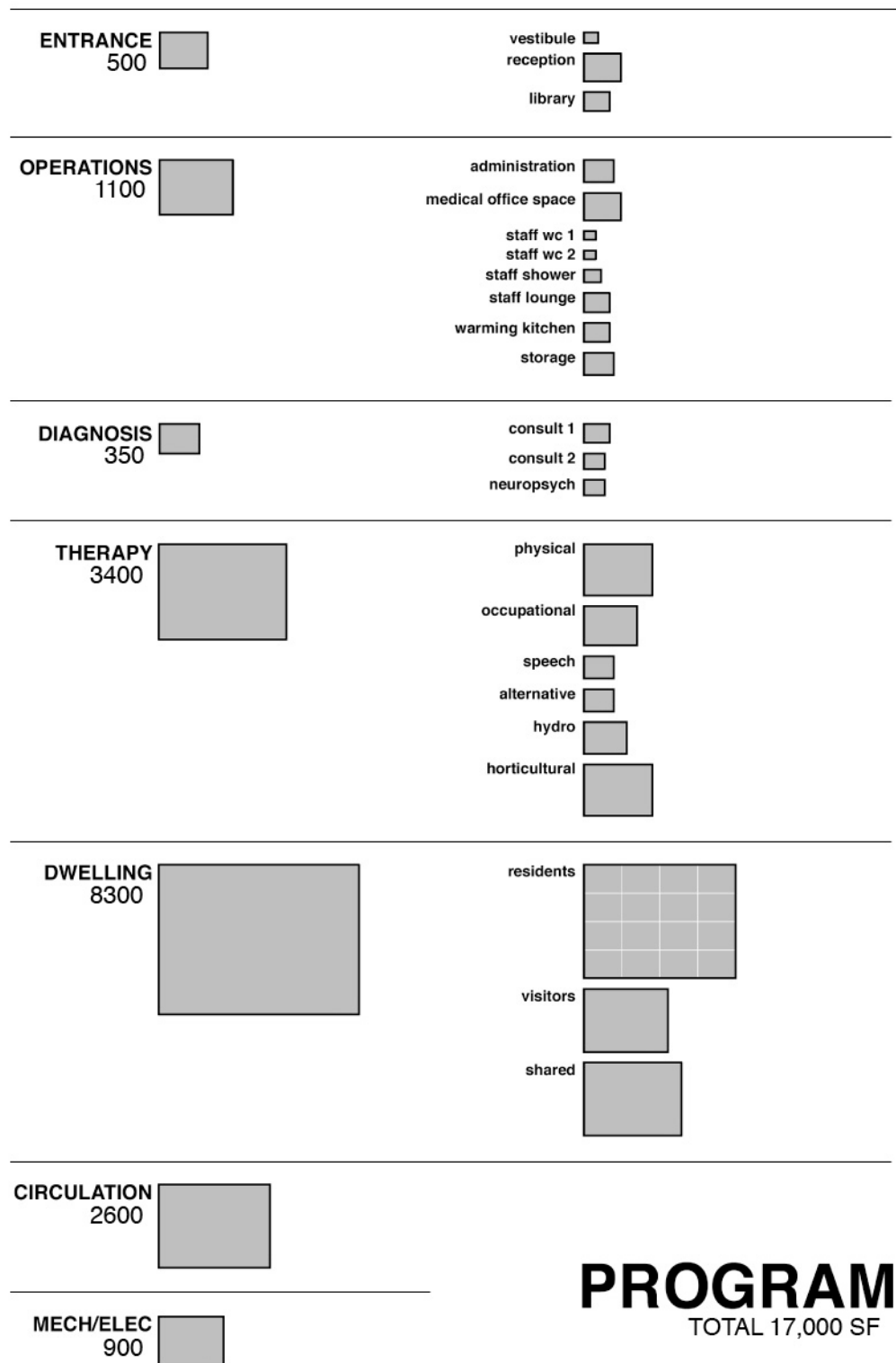


Figure 21. Program Needs. Not intended to denote room identities or proportions.

Chapter 4: Parti Options

Intent

Imagery complemented theory in guiding the choice of a scheme. The collage shown below in Figure 22 conveys a number of ideals regarding dignity. The partis in the following discussion are necessarily judged in terms of site feasibility and efficient functional relationships, but decisions ultimately hinged on a test against the dignity thesis. What carries through to the final proposal is a subtle sectional connection between floors, side pockets of space made by slight shifting of modules in plan, and high contrast of surface texture and color.

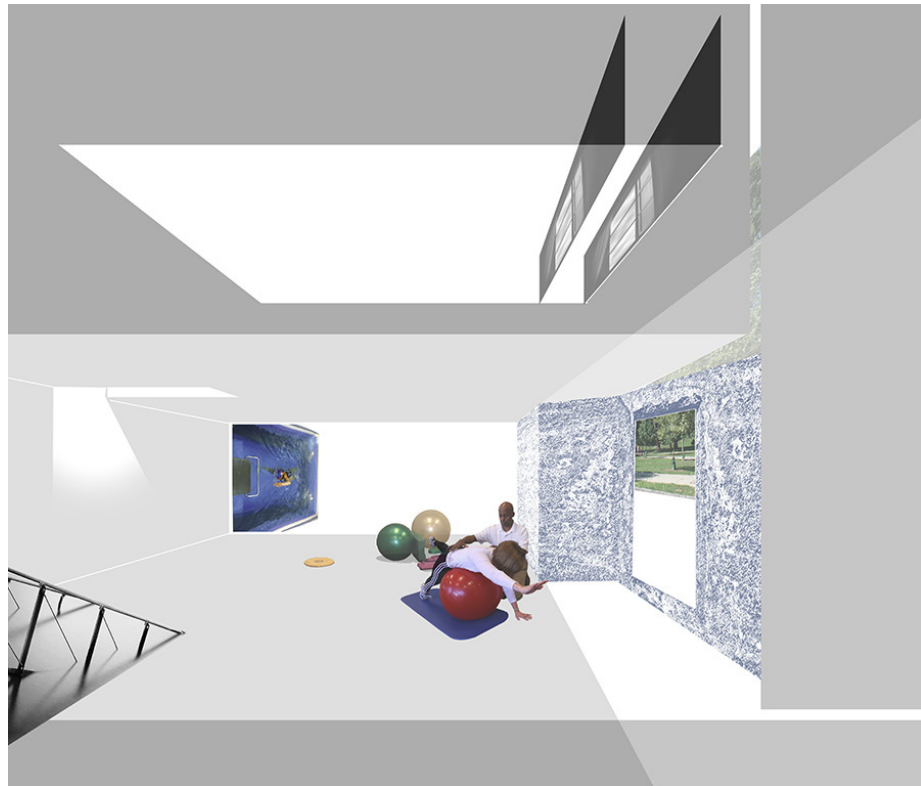


Figure 22. Conceptual Collage. The site response will require an attitude toward the 4 ft elevation change and the adjacent park. The collage shows a ramp descending the half-level, and glazing biased toward the park. On the floor above are hints of a light shaft and the distinct presence of a single room as a space between. Access to the outdoors and the vitality of park and garden will be prioritized as well.

Parti 1: “Left Brain – Right Brain”

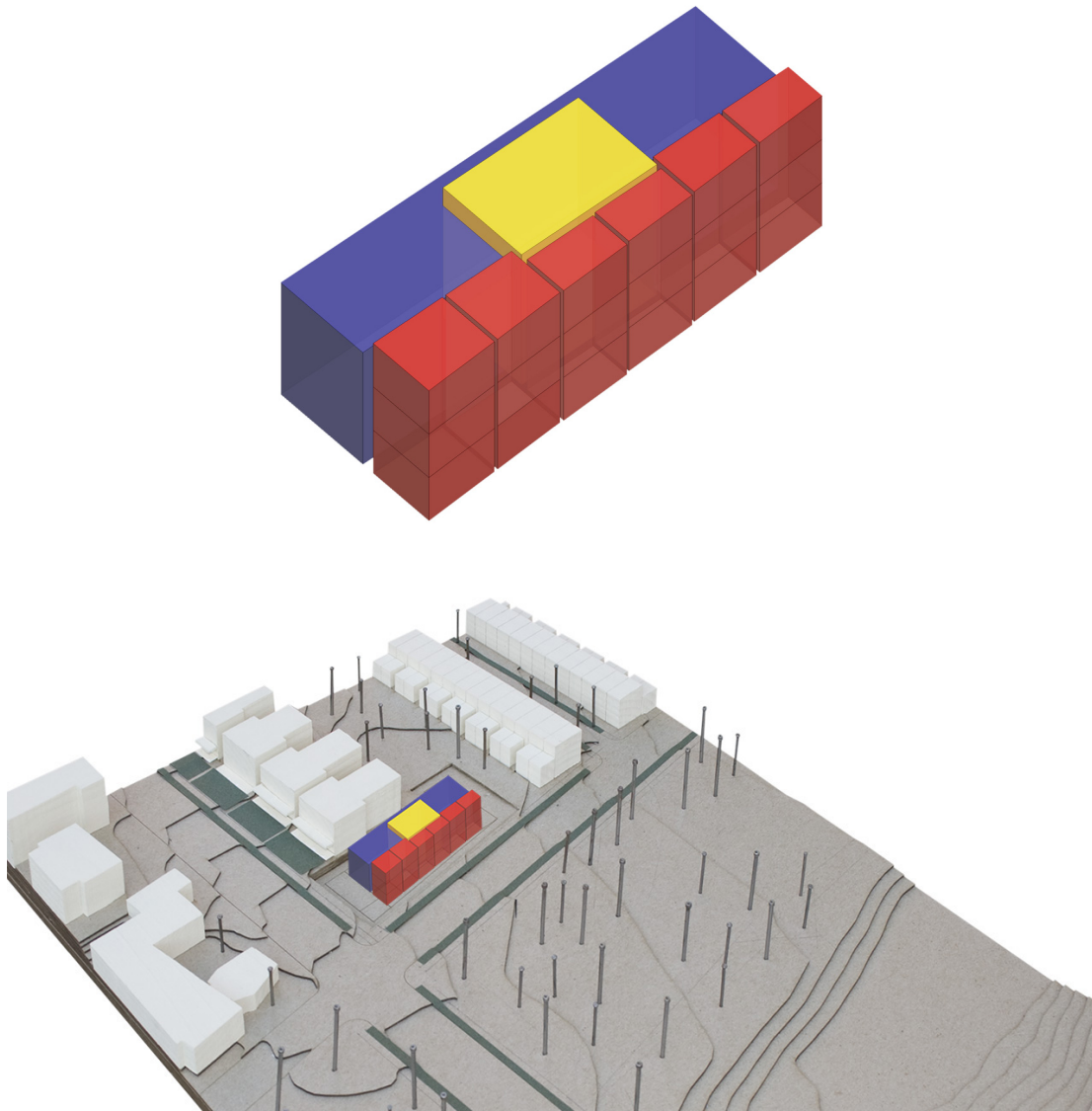


Figure 23. Parti 1. Therapy/support (blue); residents' rooms (red); community living rooms (yellow). This scheme is characterized by a binary relationship between the therapy/support component and the residences. It sets up an either-or relationship that seems almost adversarial. Some residents' rooms would be at street level. All residences have views of the park, which is desirable.

Parti 2: “Of Two Minds”

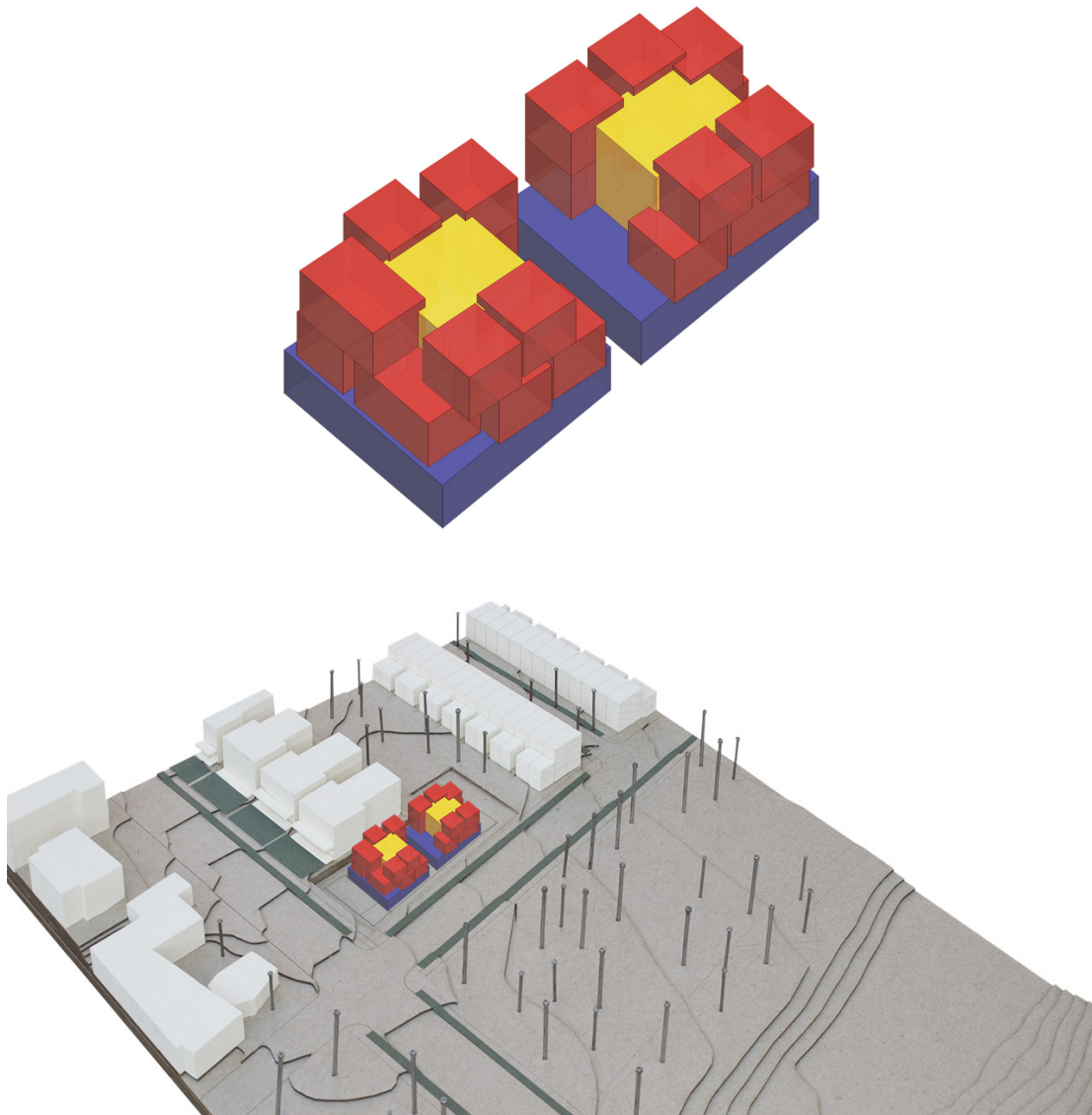


Figure 24. Parti 2. Therapy/support (blue); residents' rooms (red); community living rooms (yellow). Residences and therapy services are split into two houses. Residents' rooms are clustered around central living room areas. There is a suggested community size, but also an enclave attitude to the scheme. More suitable to a campus approach, with an ability to address questions of dignity with the scale of a larger institution. Not all residents have park views, or even views of the street.

Parti 3: “Grey Matter”

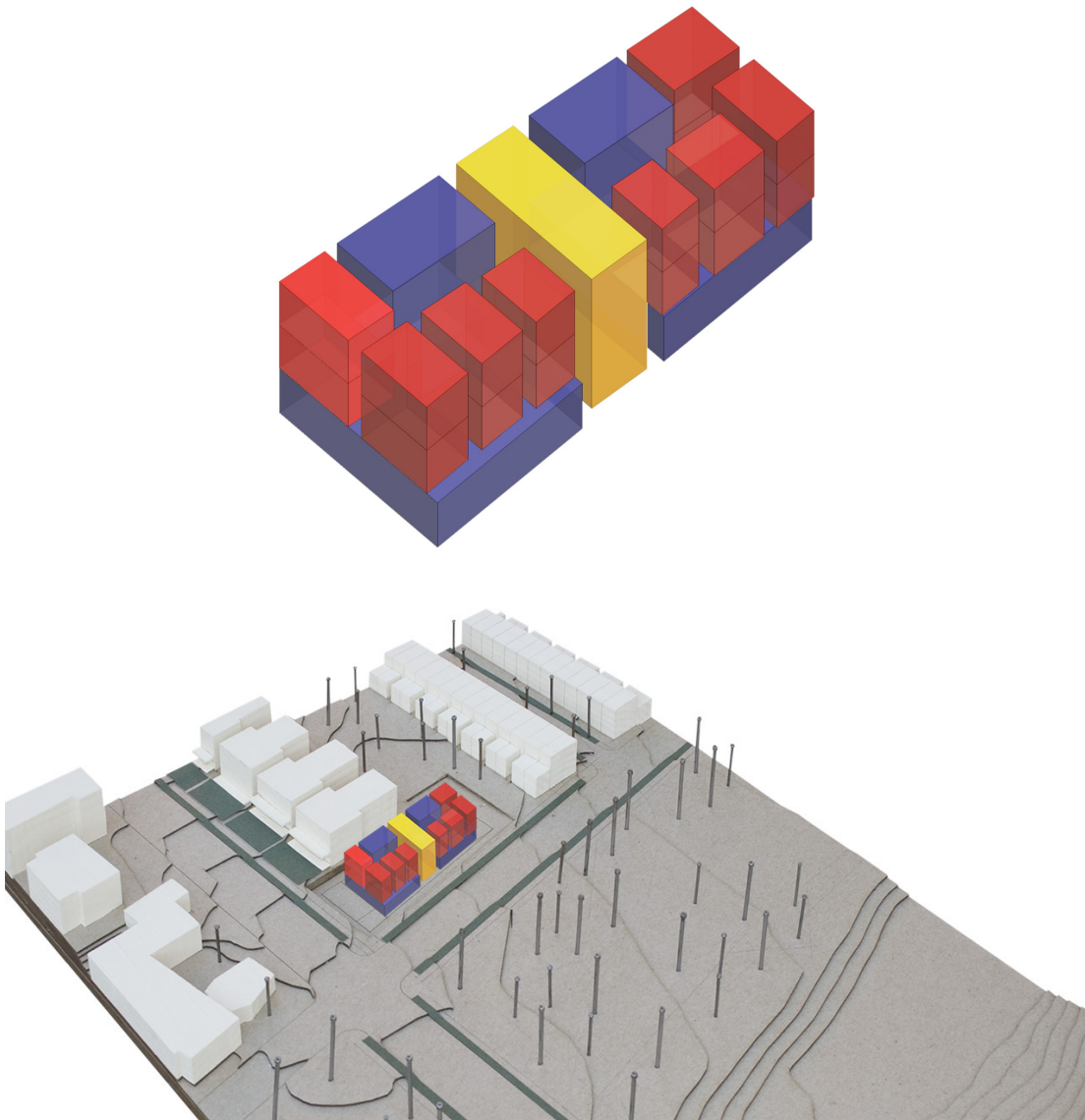


Figure 25. Parti 3. Therapy/support (blue); residents' rooms (red); community living rooms (yellow). There is space between rooms that could contain storage and support, or possible additional light and air. Not all residents have park views.

Parti Synthesis: “Gleam”

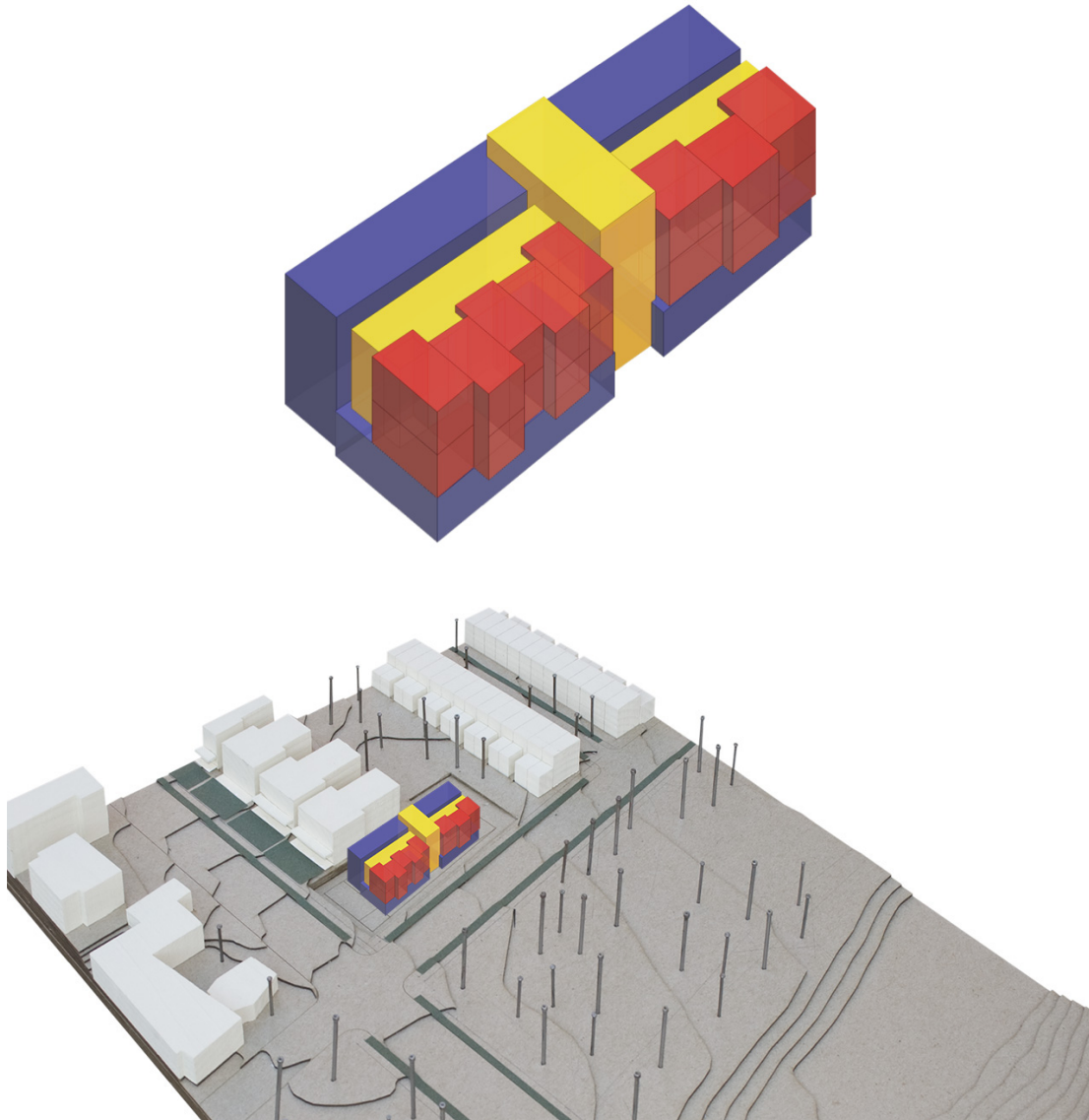


Figure 26. Parti Synthesis. Therapy/support (blue); residents' rooms (red); community living rooms (yellow). This parti combines the ideas from the first three partis that best fit the site and thesis. It is named *gleam* because the ensuing design should convey light, surface, and soul—the interaction among them may be brief but full of brilliance and hope. The size of the site helps to dictate the available floor area and hence limit the number of residences on each floor. By giving a zone to support areas that is adjacent but not subservient, there is a reinforcement of an idea of permeability (free access) and neighborliness. The linear arrangement of the residences is not a condition of the thesis, but rather done to accommodate the site: every resident possesses a view of the park. Some corridors can be repetitive, endless, and punctuated by numbered rooms rather than the fronts of distinct places of dwelling. The shifting jog of the rooms will reinforce dignity by helping to set off each room as a distinct personal object, and create pocket spaces for gathering of people and information resources. The placement of the corridors is so that rooms are at the end of a sequence. Rather than passing private spaces before coming to common areas, people arriving at each floor first encounter the community spaces.

Chapter 5: Design Proposal

Concept

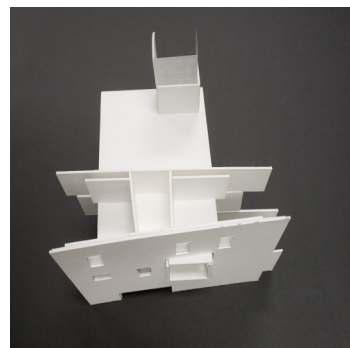
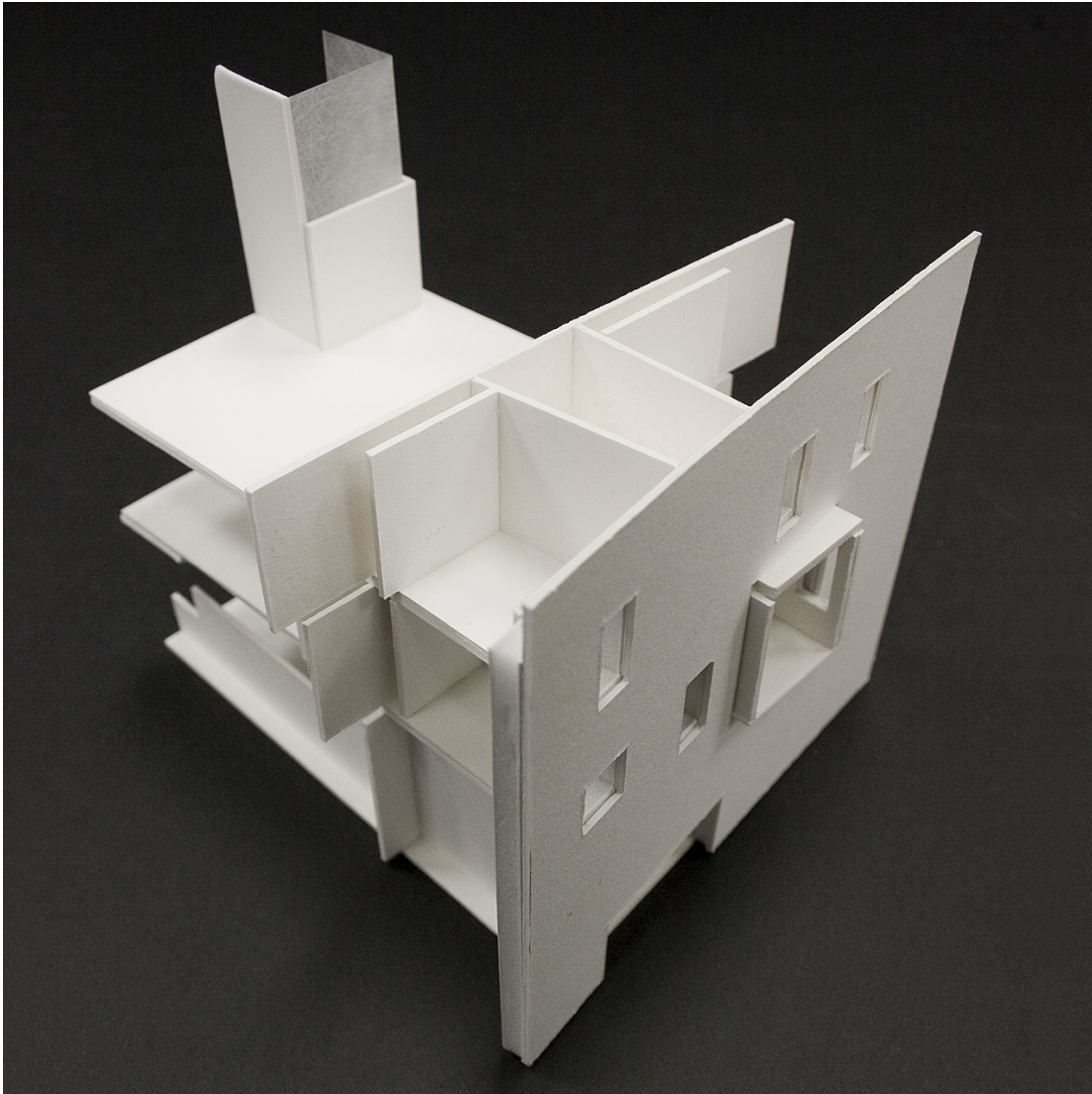


Figure 27. Concept Model. The residents' rooms are within a solid, private zone. Shafts offer circulation of people and transmission of light and air throughout the levels of the building.

Site Strategy

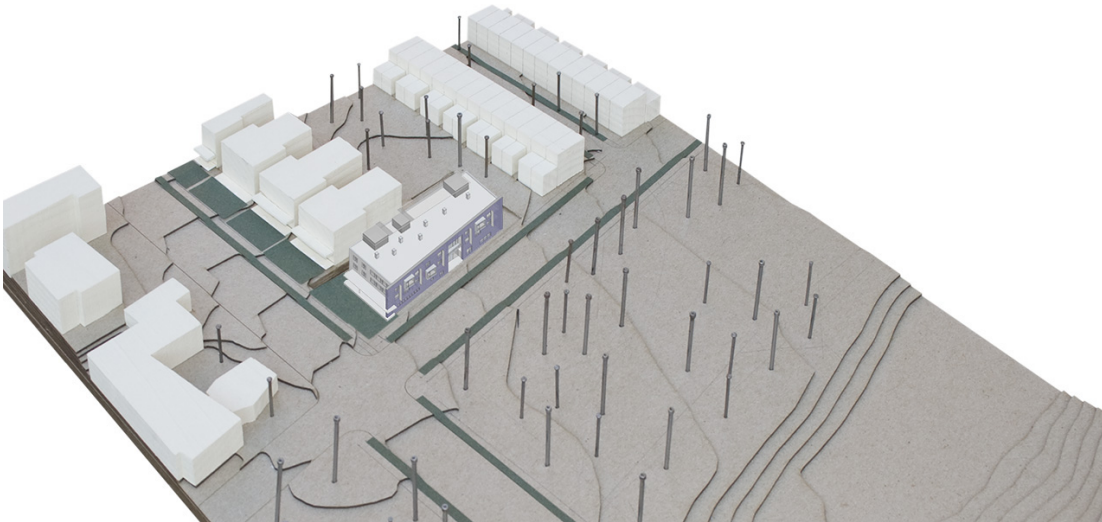
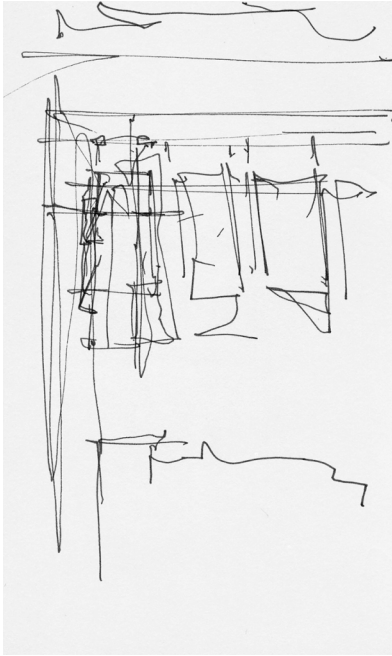


Figure 28. Site Strategy. The Chester Avenue side will maintain the existing rhythm of the block by sharing the same setback as the duplexes, and by having its own front garden. The public face of the building will be on 43rd Street, across from the park. This building makes a wall for the park, with a large scale opening that announces the entry and main building living spaces.

Approach



Figure 29. Approach Perspectives. Crossing Chester Avenue, walking south (top). Walking south along 43rd Street with Clark Park to the right and the main entry just ahead on the left (bottom).

Organization

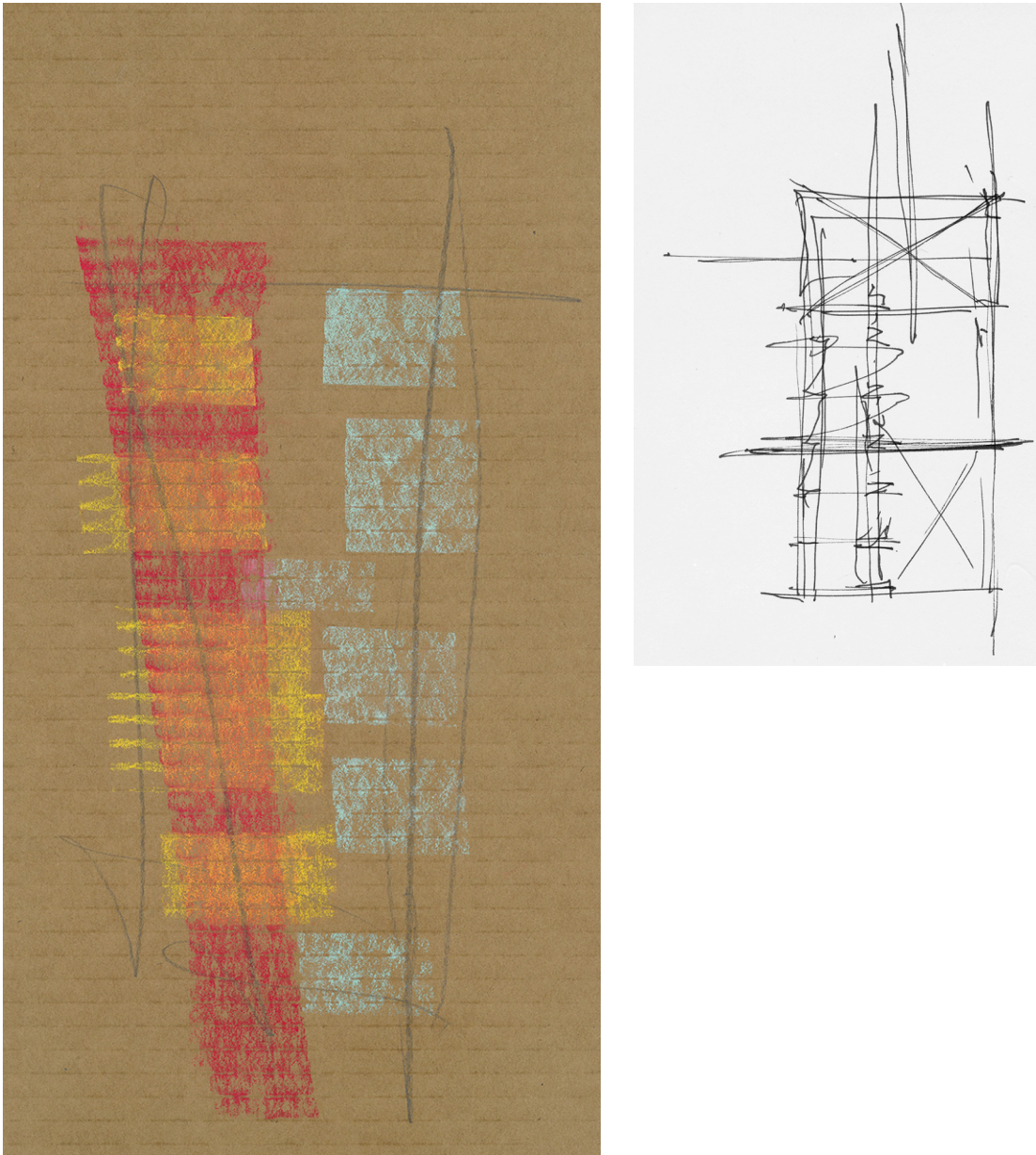


Figure 30. Organization Concept Sketches. North to south, the major division of the building is into three parts, with a central gathering place and circulation at the center. Overlaid on this is a rhythm of residences on the park side of the building. Shafts penetrate the plan at a number of places, depending on available space and the light, ventilation, and circulation needs.

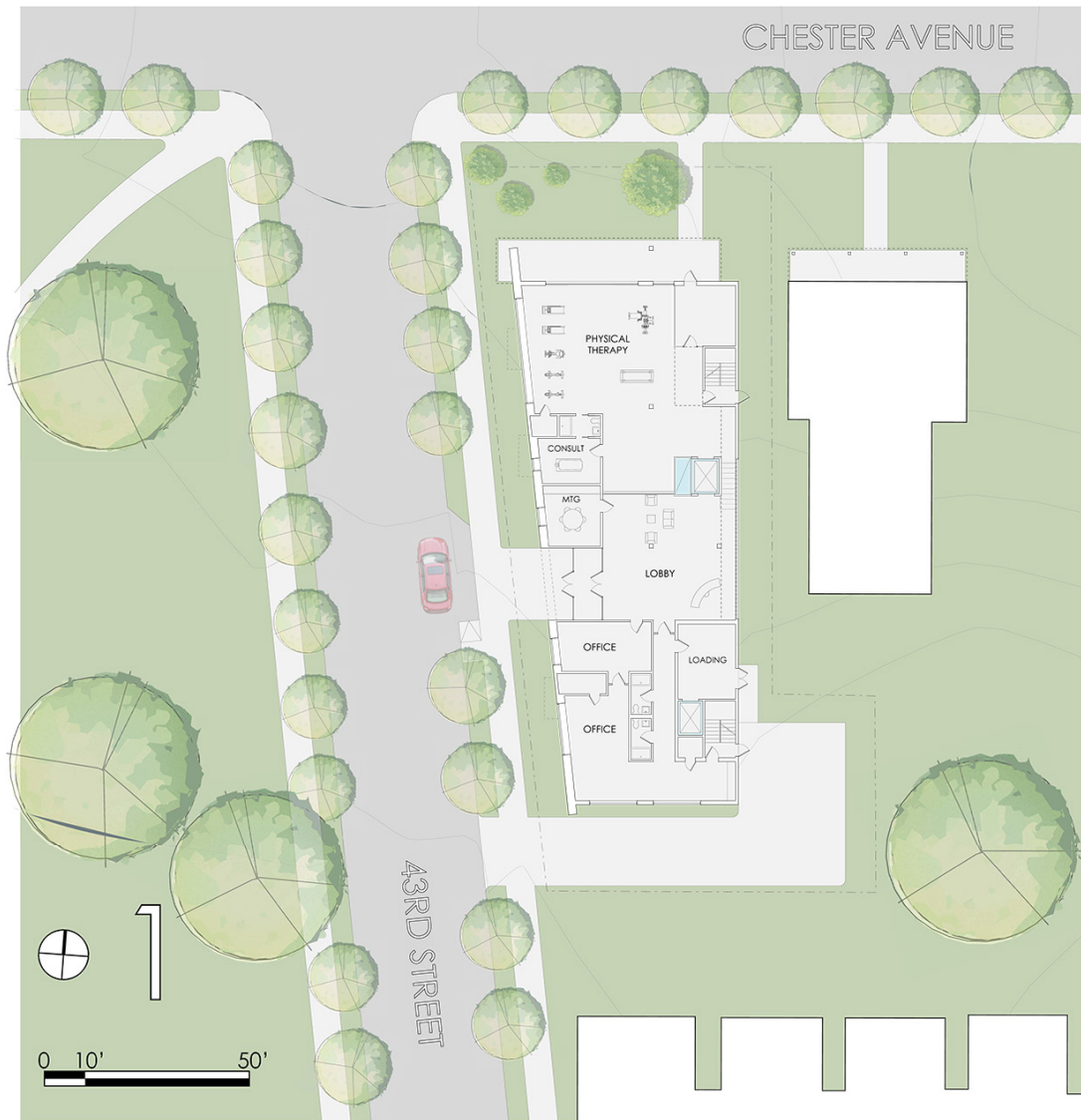


Figure 31. First Floor Plan. Drop off is along 43rd Street, with two reserved parking spaces (one is ramp accessible). Service at rear. Physical therapy is reached by ascending a half level from entry lobby. Porch and small formal garden are at the north end of the building, adjacent to physical therapy. Consult room is a place for examination, table physical therapy, and massage. The small scale of the building and the possibility for flexible scheduling allow for co-location of functions in many of the therapy and office spaces.

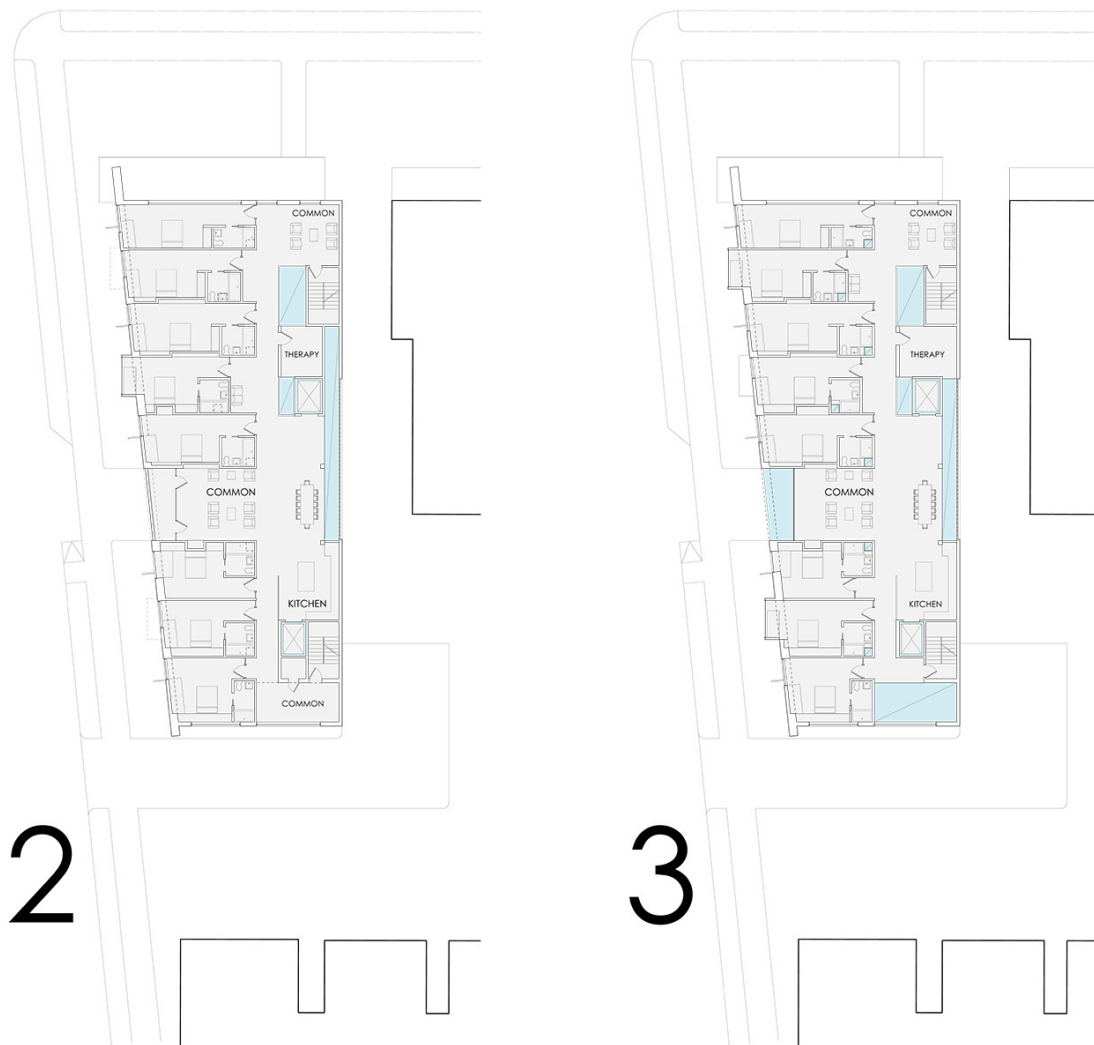


Figure 32. Second and Third Floor Plans. People arrive by lift at the main common area, before going to the more private spaces beyond. The resident rooms are distinguished by size, shape, and position. The results of this are that each room is objectively separate from its neighbors, and the residual spaces along the circulation can accommodate seating and/or resource library shelves. The kitchens are serviced by the secondary lift.

Room

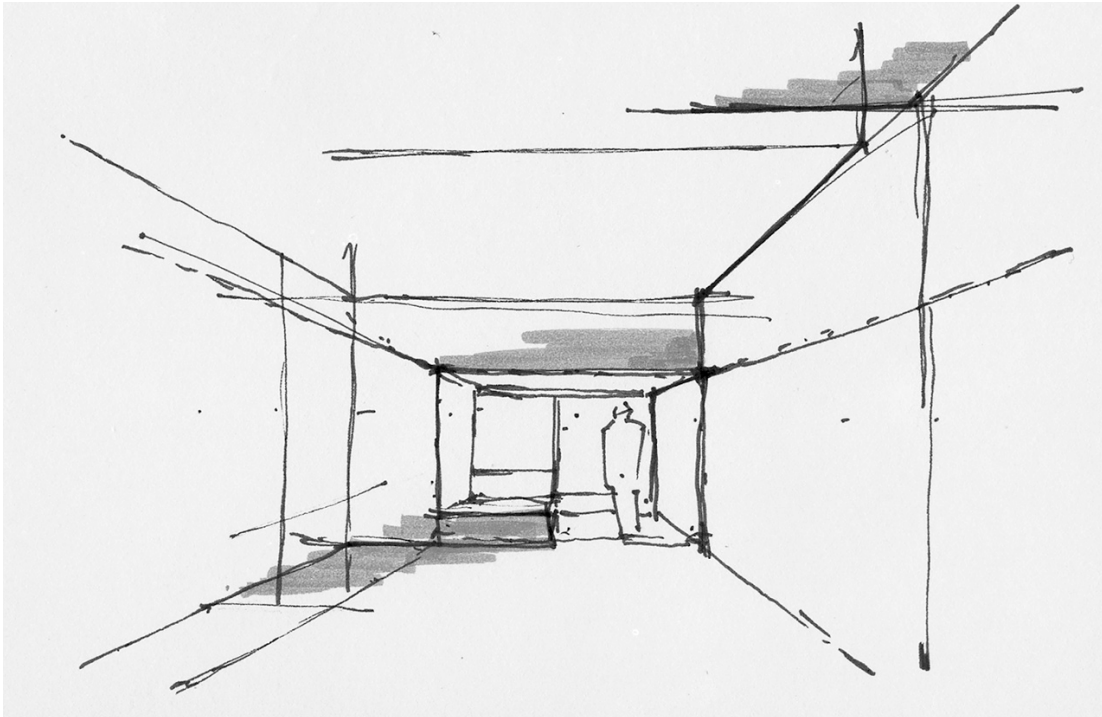
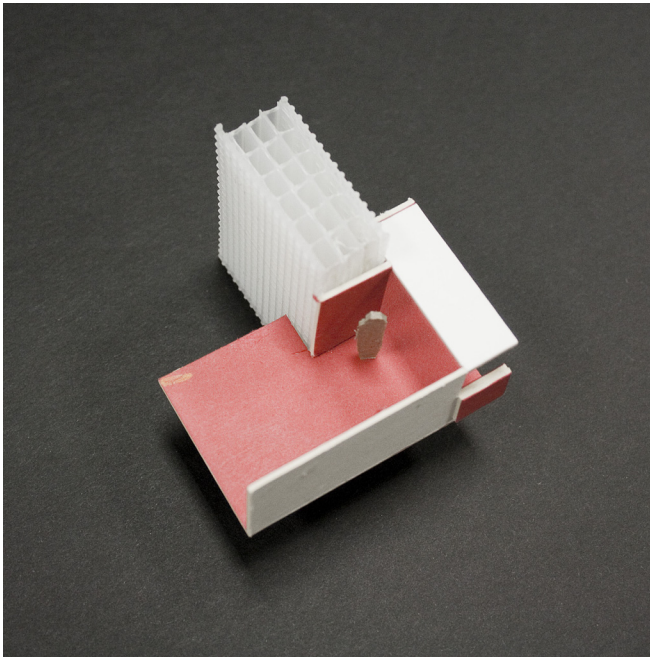


Figure 33. Room Concept Model and Sketch. Within the limited floor-to-floor space, ceiling heights will be modulated to create zones outside and inside each room. Color will be used to help identify each residence. Sleeping areas, including a bed for a visitor, will have natural light and views. Shafts will bring light into the core areas in each room.

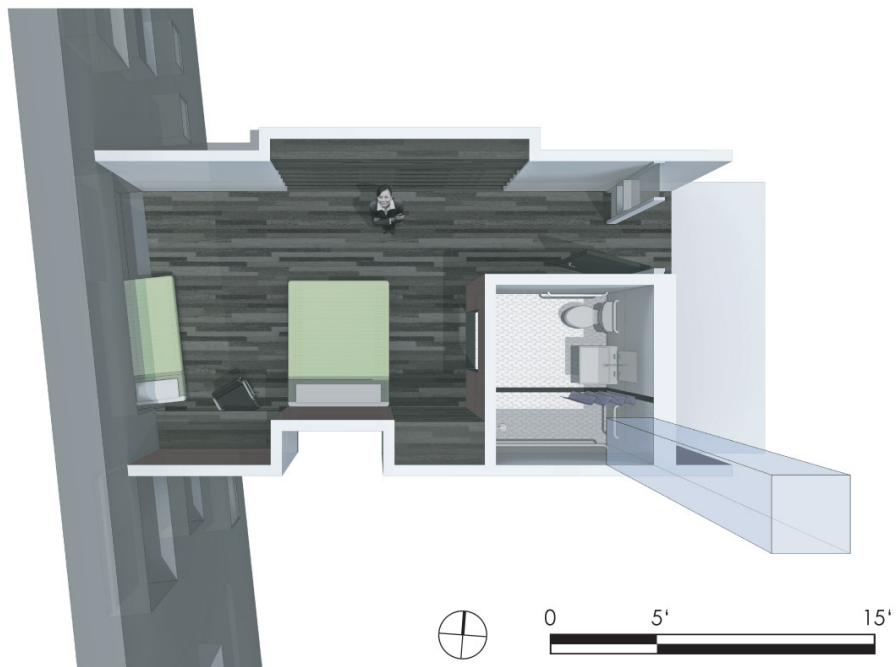


Figure 34. Room Plan and Perspective. This is Scott's room. His wife is waiting for him inside while he returns from speech therapy. Each room is different; this is a result of the site geometry and the varying width of the circulation space. Some rooms are set back from the circulation path, and others push forward. Each room is further distinguished by color, name and photograph, and personal items which may be placed in the frame next to the door. Operable glazing next to each door allows for control over ventilation and sound. Inside the room is a place for an invited guest to sleep, and there is a variety of built-in storage options to suit the needs and reaching ability of any resident. Each bathroom is naturally lit from above and features a roll-in shower.

Section

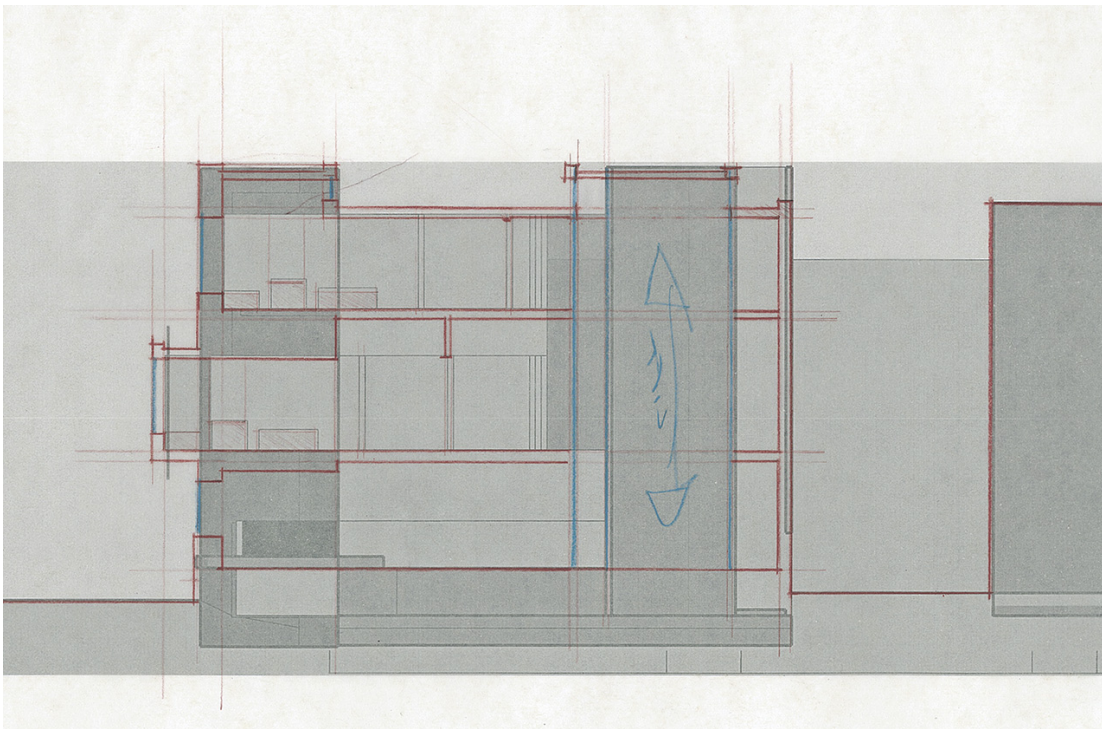
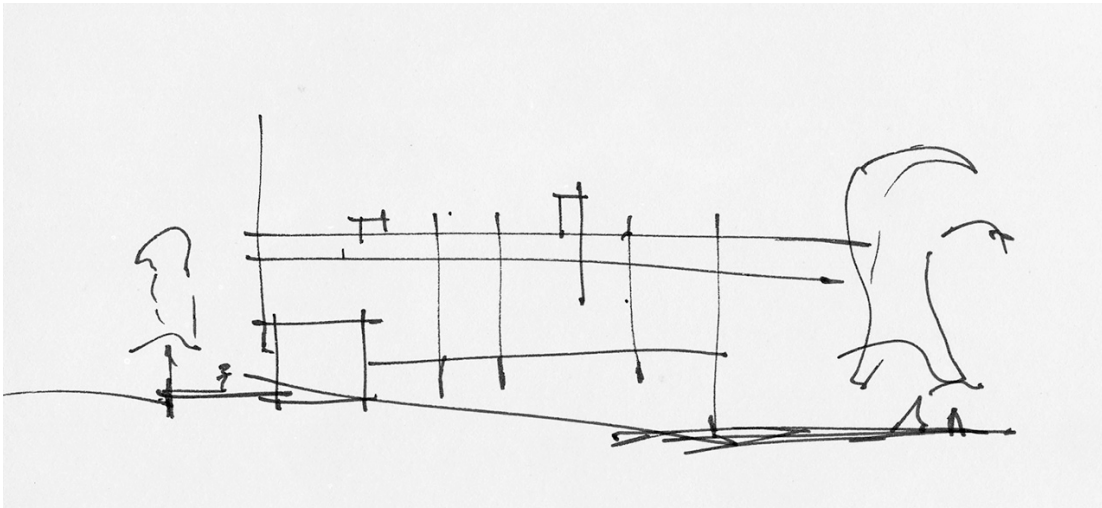


Figure 35. Section Concept and Development. The shafts have been integral to the building section since early in the design process.

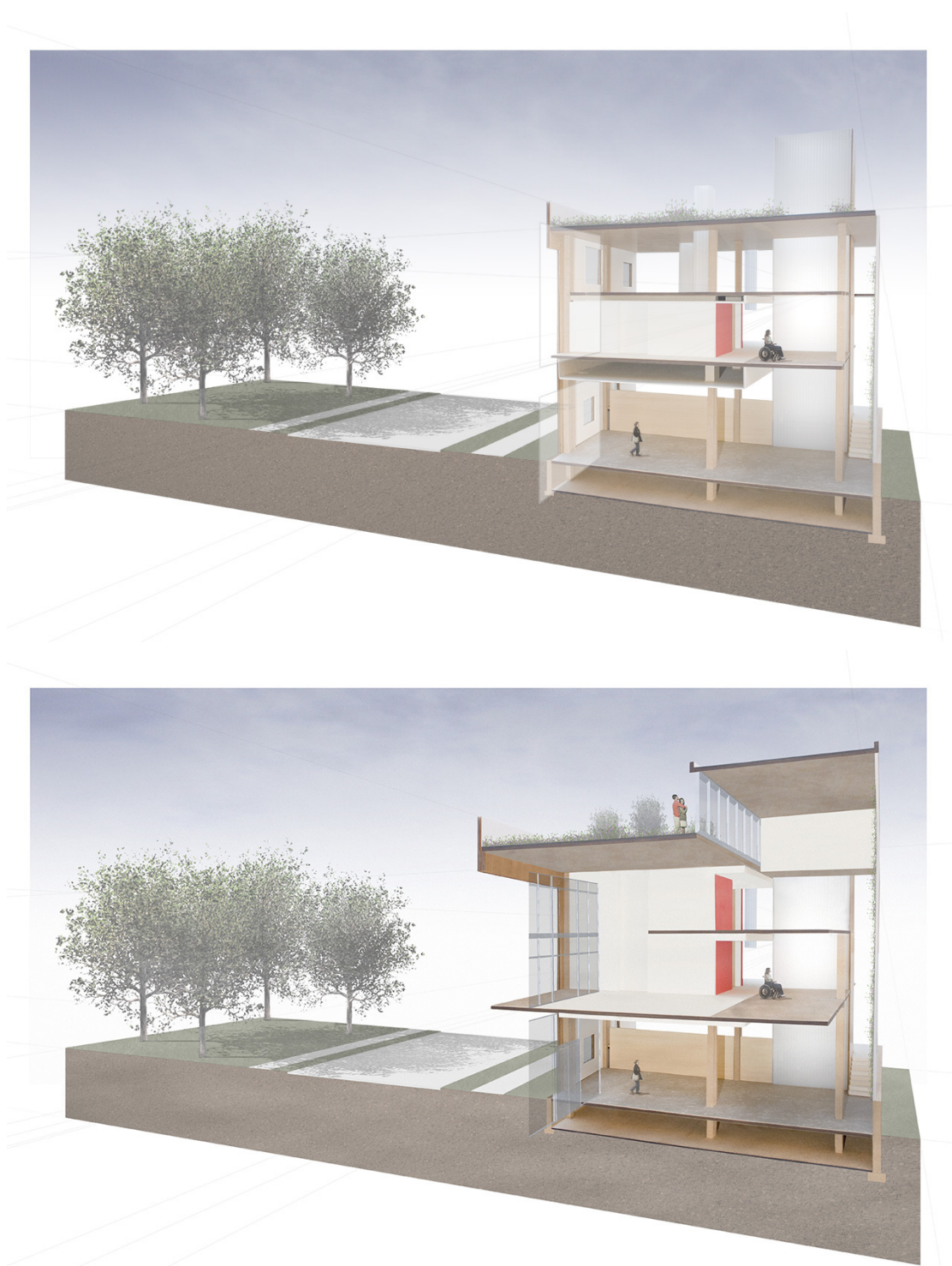


Figure 36. Transverse Sections. Original proposal (top) and exploration of connection between floors in response to jury comments (bottom). Residents' rooms are colored red. Note luminous lift, which is the primary means of vertical circulation and a wayfinding landmark, and the stairs ascending to physical therapy level. The large shafts and the skylights allow building and room scale control over thermal comfort.

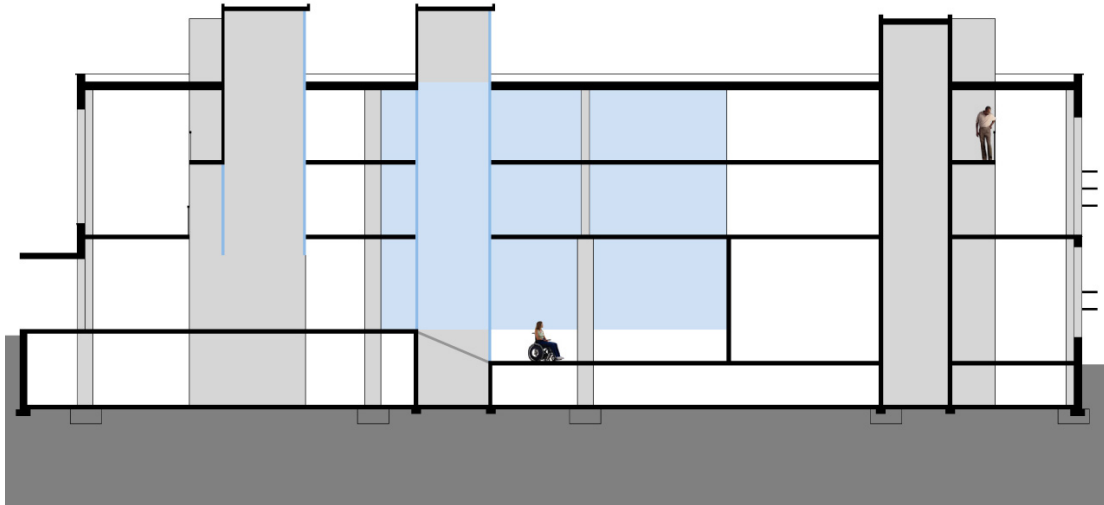


Figure 37. Longitudinal Section. Note translucent glass wall, which is an illumination and wayfinding device, the sun shading on the south wall, and shaft solar chimneys and roof monitors.

Roof

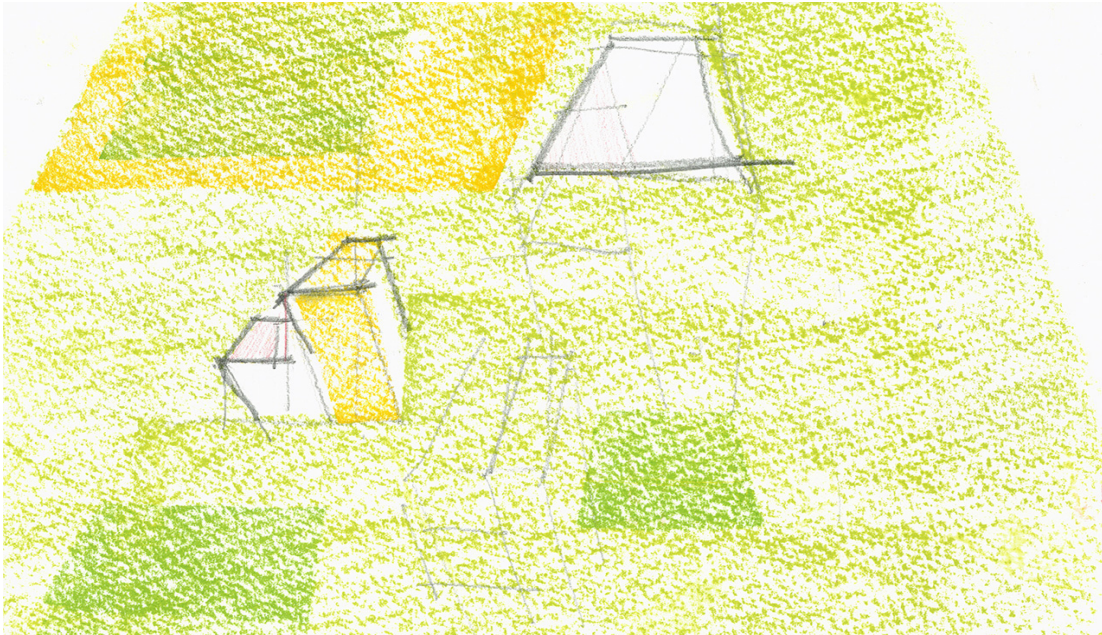


Figure 38. Roof Terrace Concept. There is a public park across the street from the site, but there should also be a place in the building for contact with nature and the outdoors. The roof, which will receive the most sun, offers opportunity for outdoor activity, including horticultural therapy. The shafts will be objects among the roof plant growth.



Figure 39. Roof Terrace Perspective. Note view of park, accessible garden tables, and the shafts which connect to pairs of rooms on the dwelling floors.

Street

Site sections and building elevations are shown in Figures 40-42.

On Chester Avenue, the facade will be expressive of present material and structural technology, but the organization of openings will be restrained because the block is residential. The first floor has relatively more glazing because it is an area of activity. The garden and the street beyond provide a backdrop for challenging physical rehabilitation, yet the setback, front garden, and porch will provide a buffer of privacy from the from the public realm of the street. The passerby would sense that there is activity on the first floor of the building but will not be able to discern the nature of the activity.

The 43rd Street side will be the public face of the building. This is the long dimension of the building; a central entry on this side leads to efficient circulation within the building. The park opposite the site is a place of public gathering. The building is not open to the public, but externally it should have a public presence. Rehabilitation has as its goal a return to society, so the building should not hide people. It should allow for privacy while still conveying the transitional nature of rehabilitation. The park facing side of the site is highly visible and on this side the facade can be a billboard for the center.

The fine line to be walked in composing the arrangement and size of openings is to express personality, liberation, and growth without violating privacy and exhibiting the residents. Along the park, 43rd Street is presently characterized by inconsistency in typology, and lack of cohesion. Townhouse sides face the park, just south of the site at Regent Street. The proposed solution is both a side and front.

Window placement need not be as strict as might be suggested by the Chester Avenue duplex facades. It may even be informed by the circumstantial, almost playful placing of the windows on the townhouse sides at Regent Street. It is a long face, and can be still be broken down and organized by a rhythm of residential windows on the top two floors. The entry and group living areas are stacked. This heart of the building is expressed as a three-story doorway that includes a covered entry, balcony, and extensive glazing. The first story windows are sized and placed to suit the variety of interior spatial needs. A horizontal ribbon of windows offers a vista of the park across the street for people participating in physical therapy.

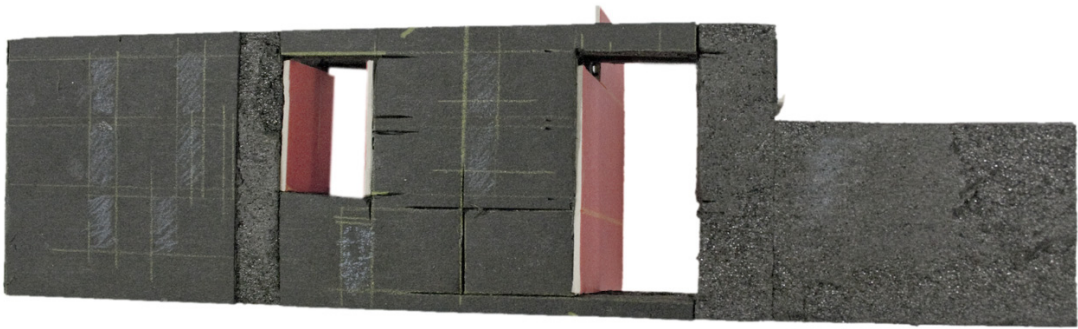
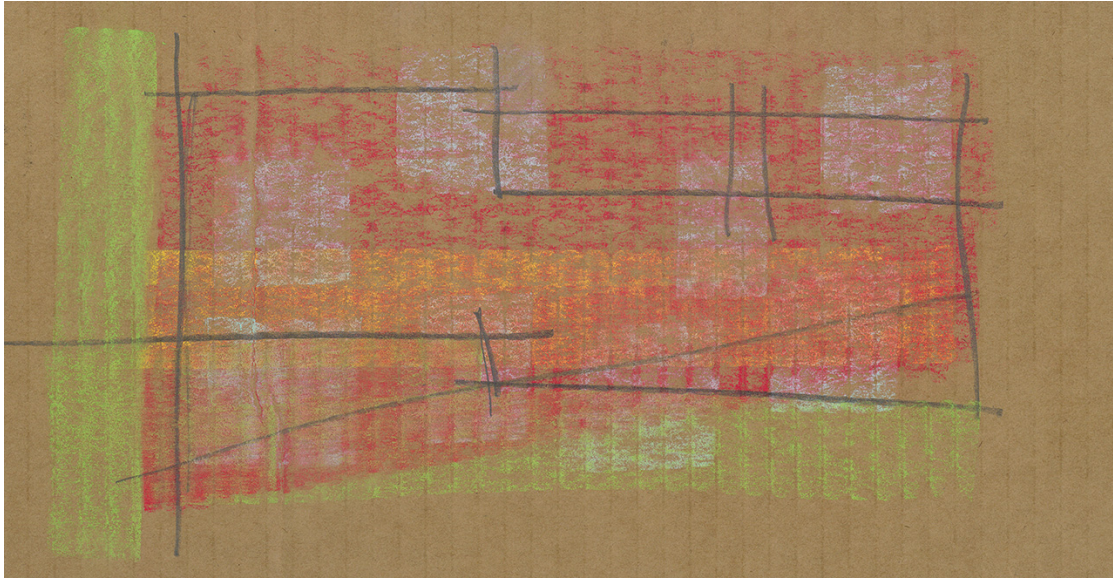


Figure 40. Exterior Concept Model and Sketches.

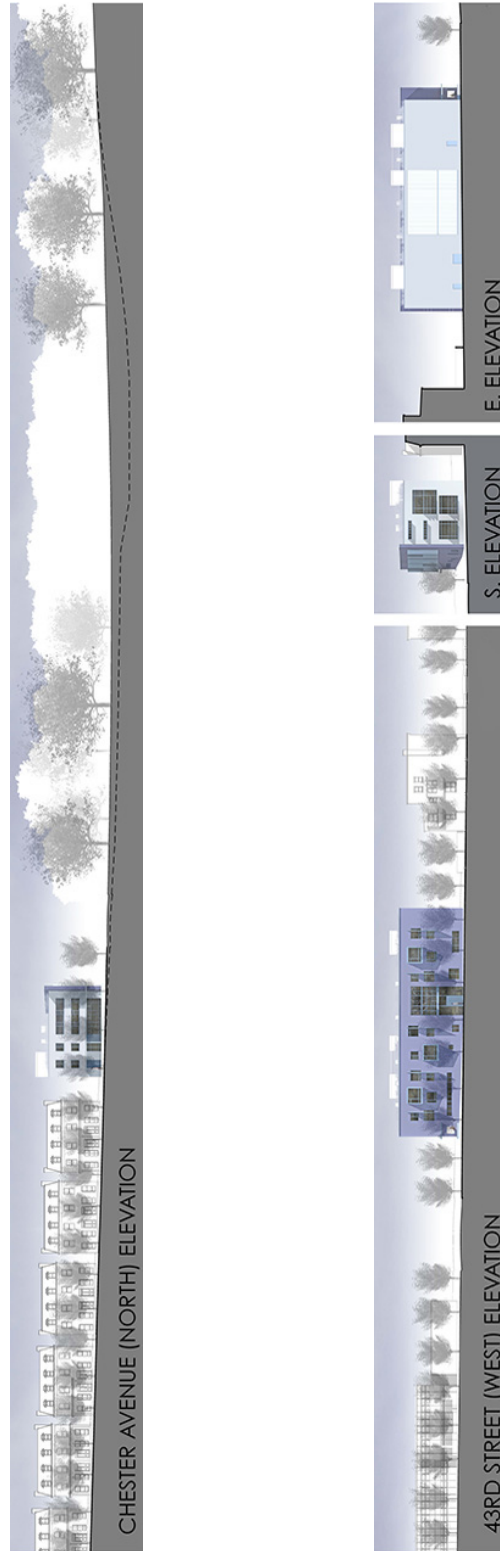


Figure 41. Site Sections.



Figure 42. Building Elevations.

Chapter 6: Conclusions

Review

General Comments

The jury at the public review stated that graphics and narrative were clear, and the presentation did not leave the audience guessing. One juror commented that the presentation showed evidence of extensive research that was applied through the design process. They suggested a deeper investigation of the design at an intimate, human scale. One juror spoke of the building as a space between hospital and residence and rightly noted rehabilitation as a regenerative, rebirthing process. They advised taking a playful, experimental approach when making further refinements to the design proposal. What follows is an outline of specific jury comments and my response to them. Some responses involved changes or additions to design proposal graphics. This is already reflected in the images in Chapter 5, but will be explained here.

Building and Sky

Originally, I had rendered the elevations without depicting anything on the roof. The jury noted this, and these omissions were corrected for this document (Figures 41 and 42). Besides this, the roof was programmed and developed late in the design process, and the lack of resolution is evident in the proposal. A juror asked me to consider the power that a reconstituted earth plane on the top of the building might have for building users. I agree, and would consider an intensive green roof instead of the raised beds that I showed in the roof perspective. I am convinced that this

would be appropriate for at least two reasons. First, the site as it exists is a heavily planted wildflower garden, and it would make sense to recreate this green space and thereby mitigate any potential contribution to a heat island effect. Second, as a healthcare facility, the green roof could be developed as a healing garden, which would extend the program beyond the simple gardening activities and horticultural therapy that are already planned. Further investigation would necessitate development of a detailed roof plan and revision of section and perspective drawings.

Street and Neighbor

One juror was opposed to the location of the building on this residential block and the character of the building's east elevation. I agree that this elevation could be improved so that the neighbors have a more pleasant view. Side windows in Philadelphia duplexes typically offer access to light, air, and emergency egress, but often the view is only of the neighboring building a few feet away. It would be a goodwill gesture, perhaps, to include a mural or other artwork, although anything would fall short of the park view they would have previously enjoyed. I agree with a comment from my committee that a cascading main stair in the slot on the east side of the building would offer the hint of activity on the translucent east elevation. As for the first part of the juror's comment, I stand by my decision on the location of the building. There is ample precedent throughout West Philadelphia for the integration of healthcare buildings into residential buildings. Across the street is a city clinic. It should be noted that the encroachment by the hospitals and the universities into West

Philadelphia is often a source of conflict with residents, but it was not intended that this thesis would solve that problem.

Accessibility, or the experience of the building from people on the street, was brought up by a juror. My response was to revise the shade and material of the exterior finish in the elevation drawings (Figures 41 and 42), and to develop a new drawing (Figure 29, bottom) showing the approach to the main entrance. The exterior finish is a medium blue glazed brick, which reflects the park and light. If I were to further develop the design, I would consider other envelope options, including a lightweight skin. This might lead to a more integrated envelope composition that could also form the shading devices and balconies, so that they did not read as additive elements.

Life

The jury encouraged me to consider a more dynamic, playful relationship between floors. My response is the collage of digital images with a photograph of a 1:24 scale physical section model (Figure 36). There is clearly more that could be done with this image and with other studies of the interior experience, most notably a thorough consideration of light. Furthermore, continuing investigation would necessitate study of the intimate relationships between people in the spaces, and between an individual and the architecture.

Retrospection

The site yielded many constraints. At best, the small site helped to keep the design process focused on fundamental relationships between individual and room, and between room and whole, but it did severely limit freedom in development of the building section. This did force the creative use of the shaft penetrations but precluded the consideration of options that had a more open relationship between floors. It is possible that there were other section options that could help to defend dignity as well as or better than the proposed solution. A feasibility study that included not just massing studies based on floor area allowances but also some allowance for double height space and multiple means of access may have led to selection of a slightly larger site. Other types of programs that highlight issues of dignity could also be used to test the thesis—substance abuse rehabilitation comes to mind. I imagine that such a program would be more easily accommodated by the selected site, since the floor area dedicated to physical therapy could be freed up for other use.

Study of materials and fixtures would help this thesis address the question of dignity at the scale of human touch. This was always my intention, but I was preoccupied with first making the building work at other scales. In the future, my design process should include these studies from the very beginning, even if it delays the development of other aspects of the design. If I were to continue investigation, I would examine the texture and color of materials; the nature of the fixtures that are touched by hand and body; and the color, direction, and mood of light within the spaces of the building. Perhaps I would even start the design process there.

Architecture ought never intentionally compromise dignity. In a design process that does not at least consider dignity, there is a chance of designing places that may injure human dignity in small but real ways. A place for rehabilitation of survivors of traumatic brain injury was chosen because I anticipated that many elements of the solution would be applicable and appropriate for other building types or programs. There are countless opportunities between the front door and the loading dock to design for defense of dignity, and this investigation addresses a select few. Architects, designing for healthcare or not, can and ought to design places that help people defend dignity by affirming personhood, giving users control over their environment, and providing space for personal growth.

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